

FIG.1

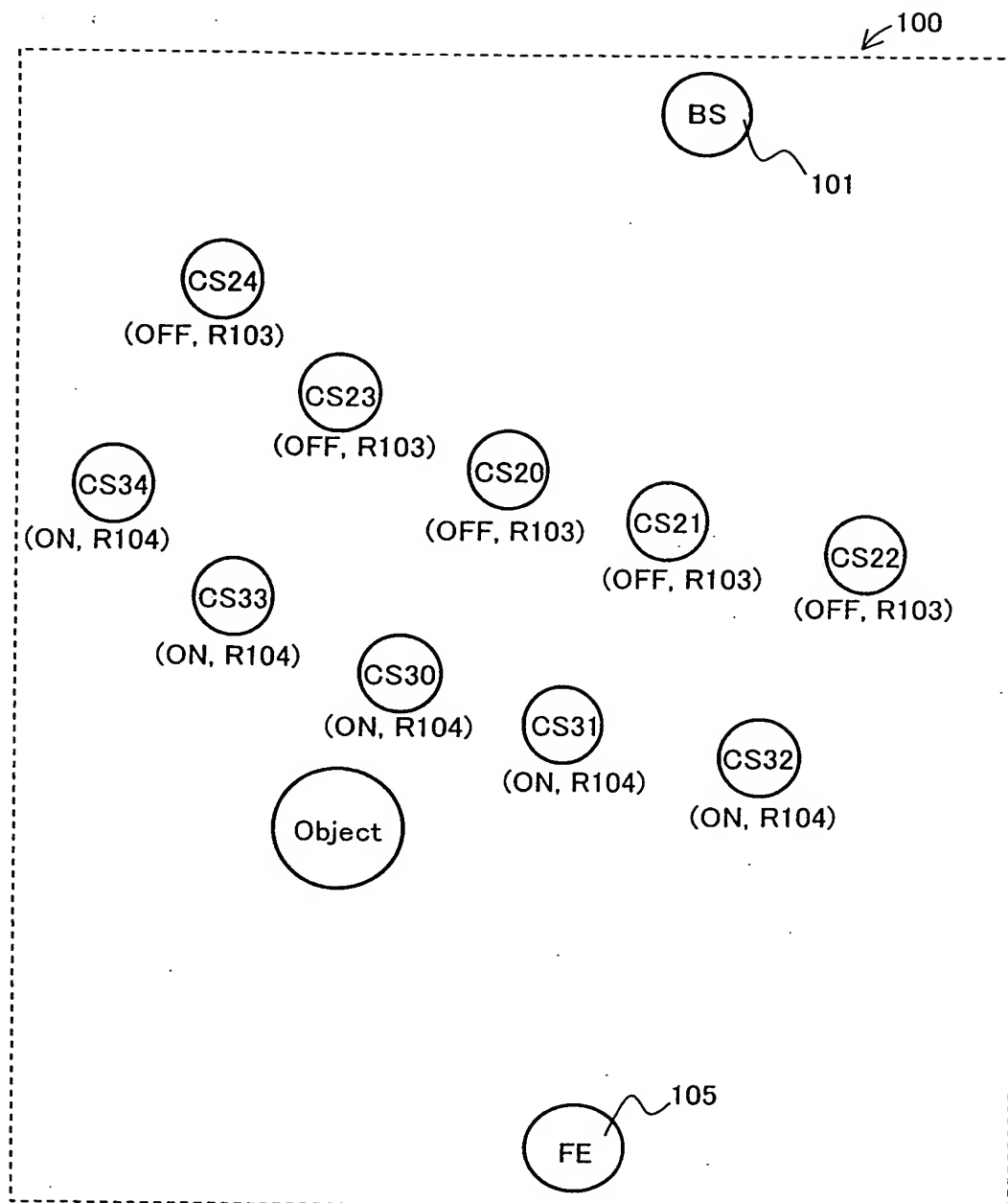


FIG.2A

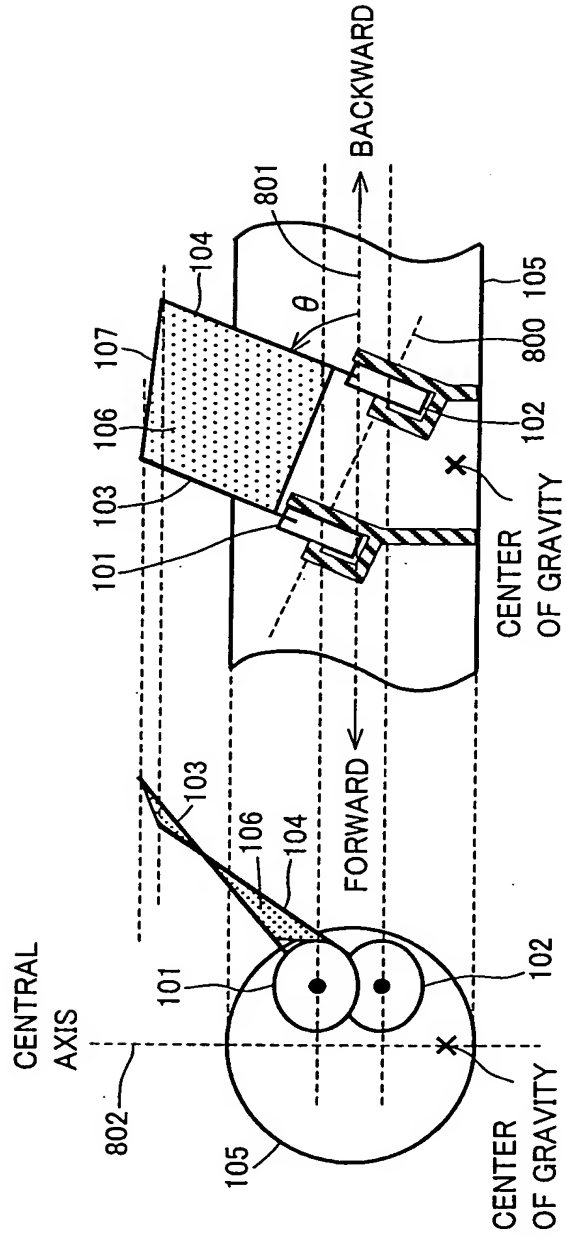


FIG.2B

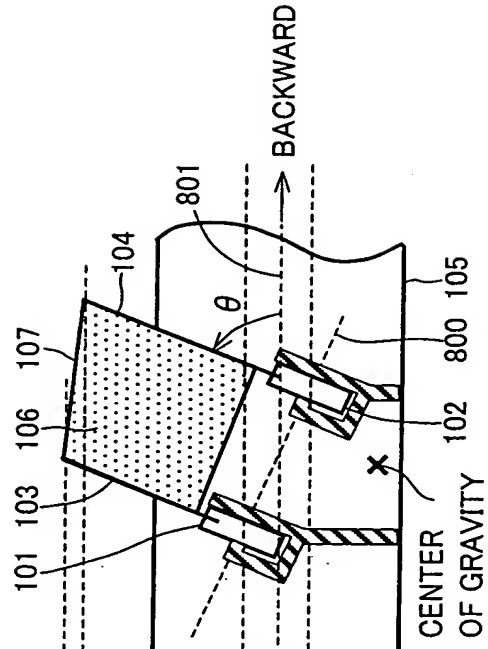


FIG.3

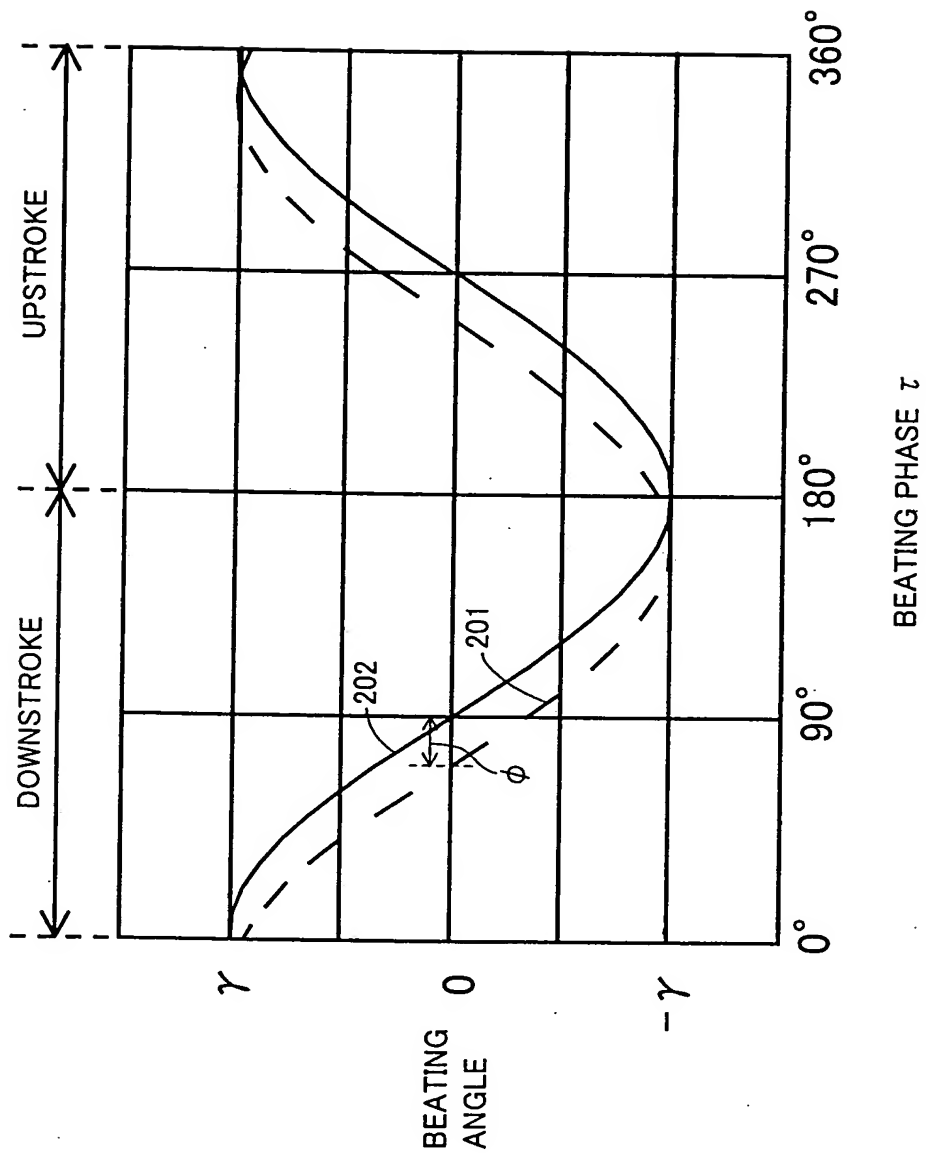


FIG.4

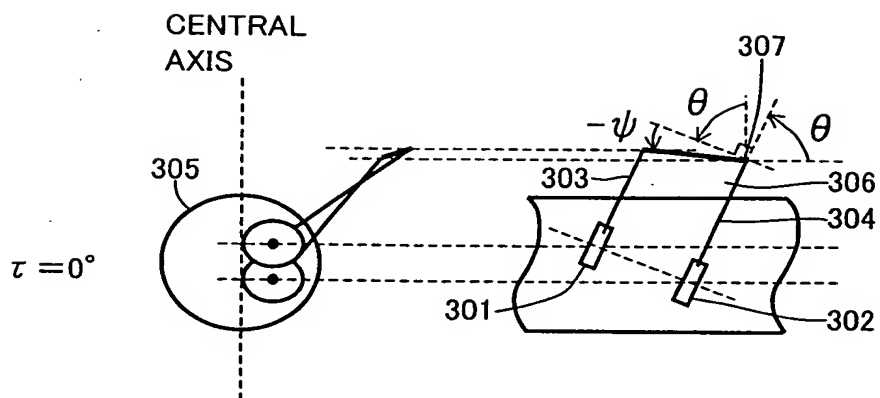


FIG.5

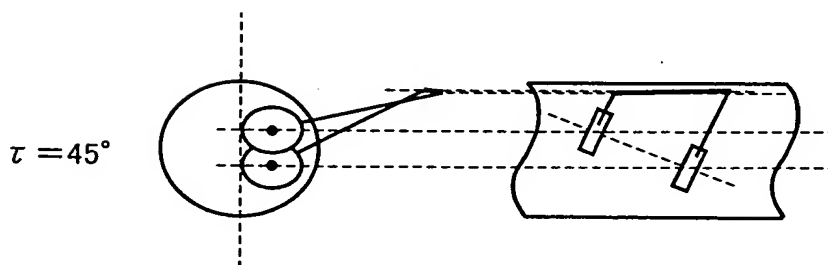


FIG.6

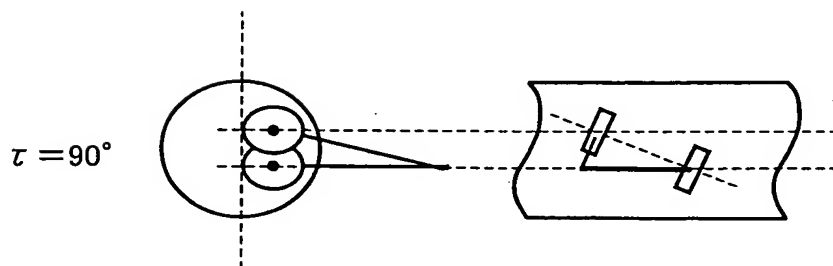


FIG.7

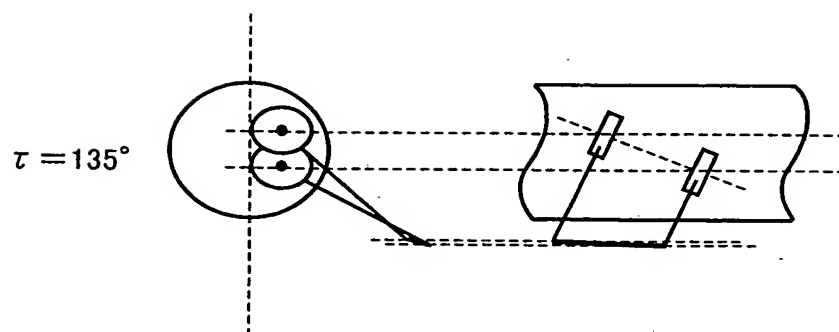


FIG.8

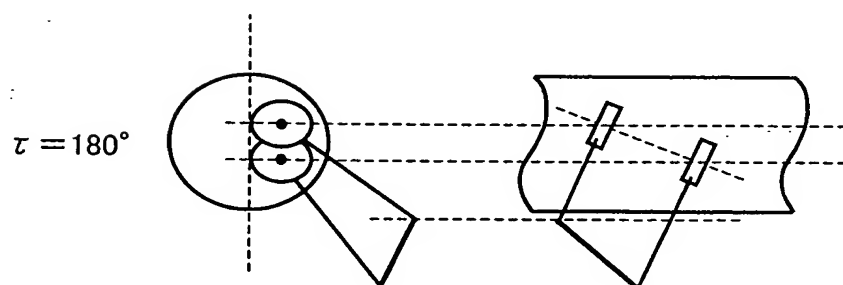


FIG.9

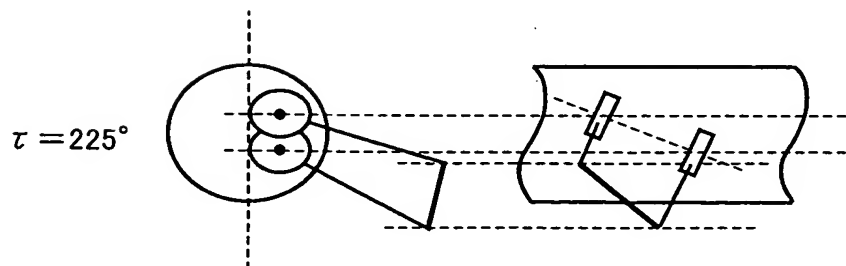


FIG.10

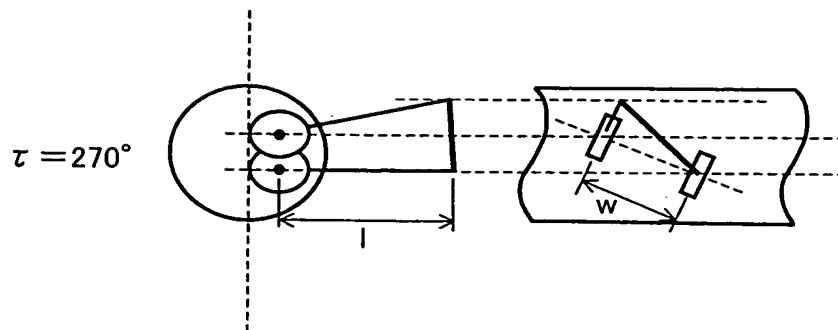


FIG.11

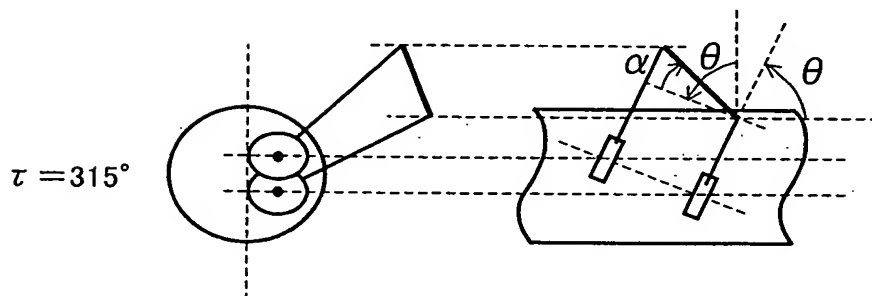


FIG.12

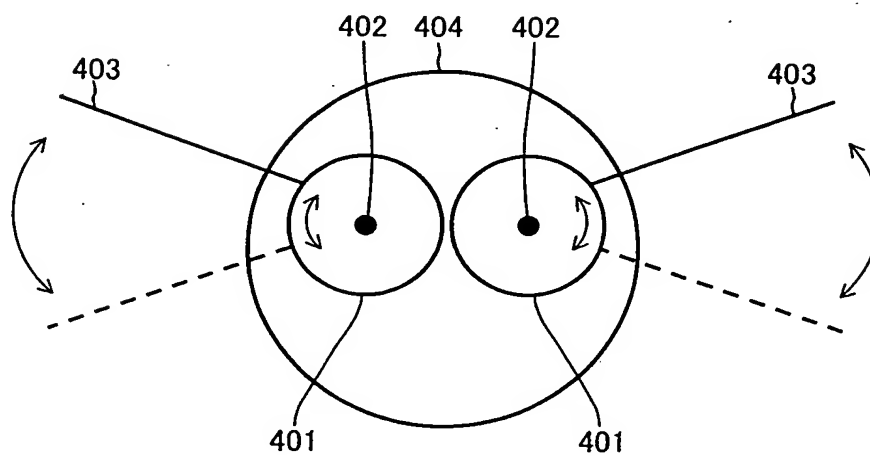


FIG.13

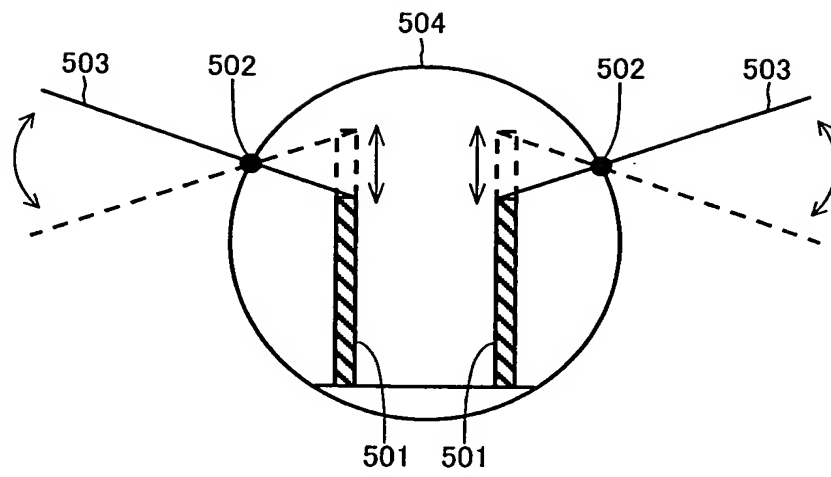


FIG.14

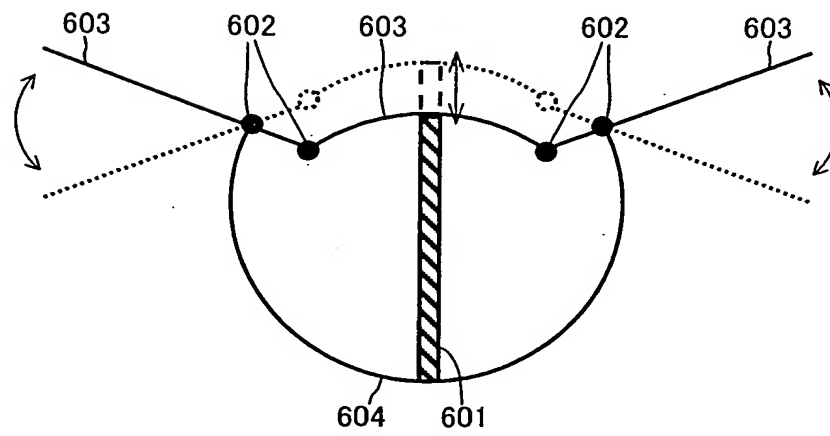


FIG.15

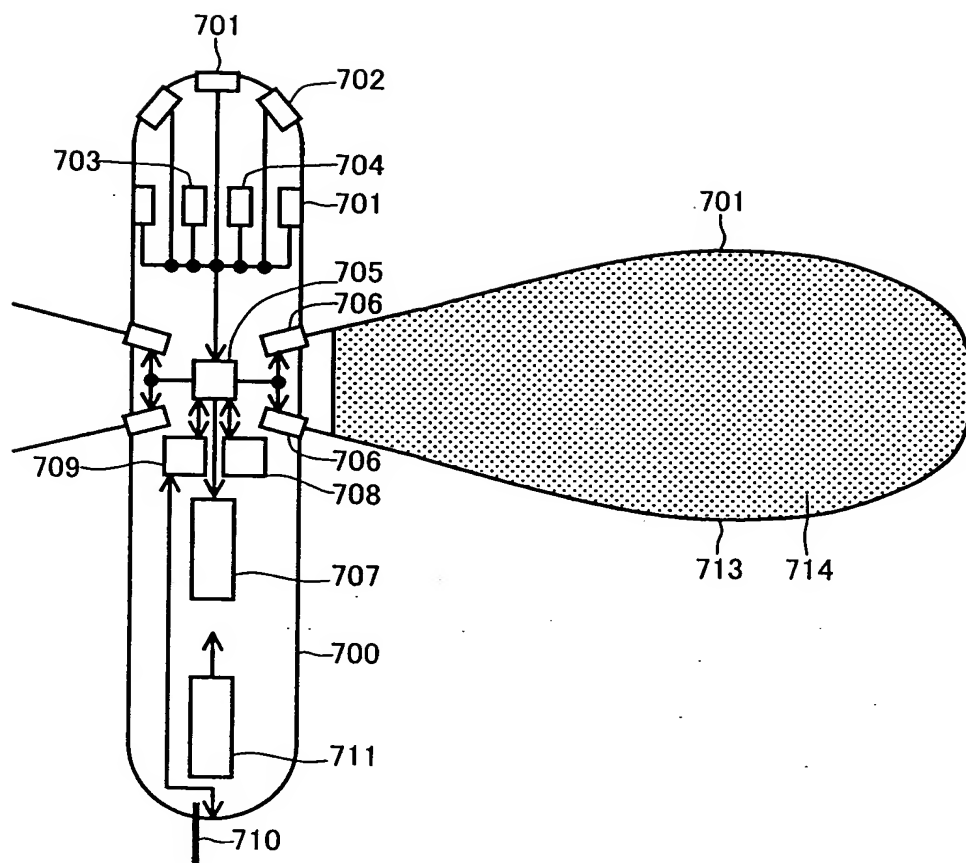


FIG.16

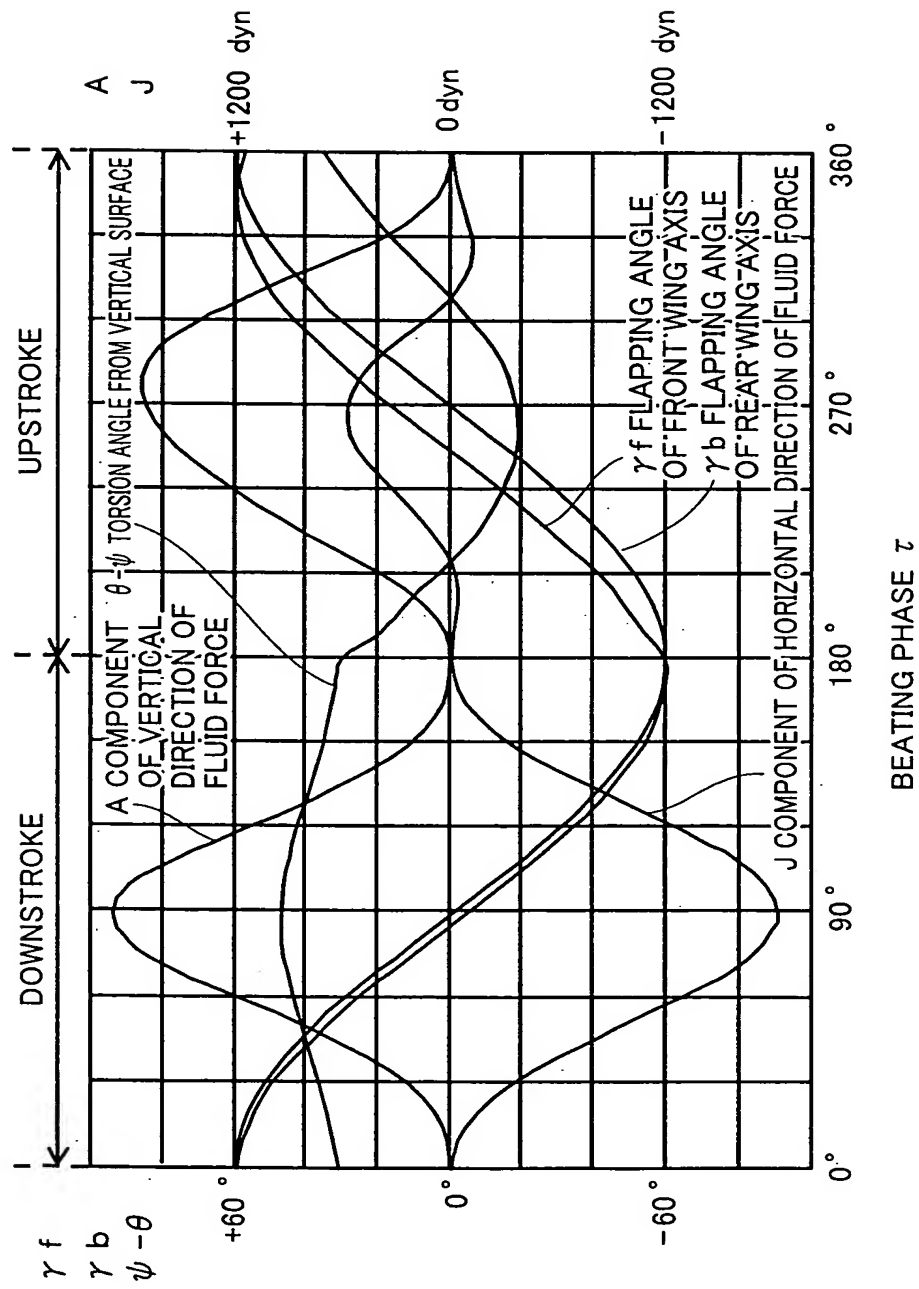


FIG.17

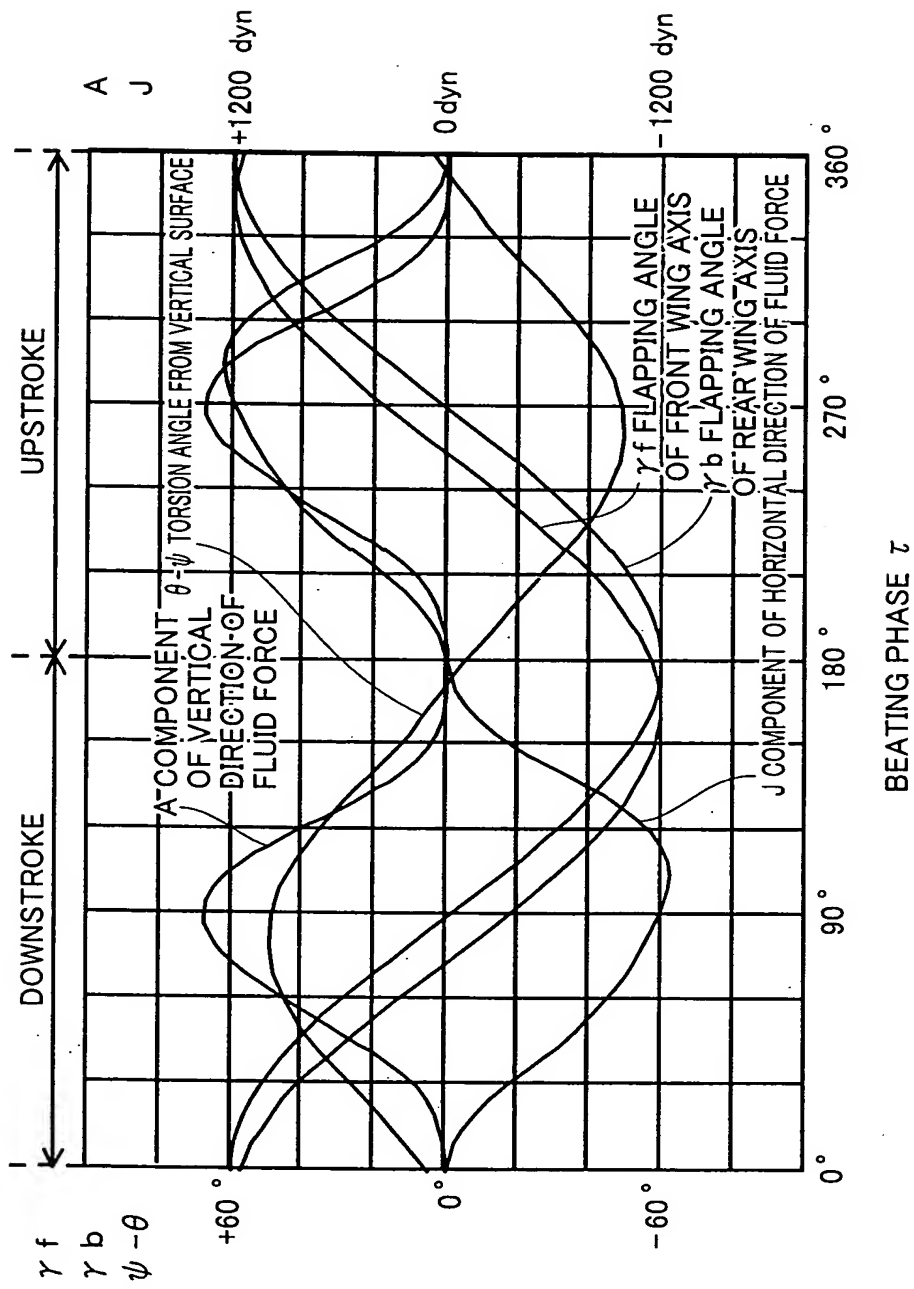


FIG.18

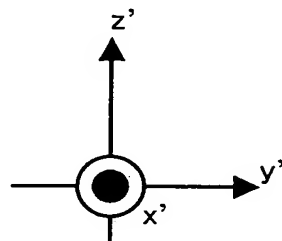
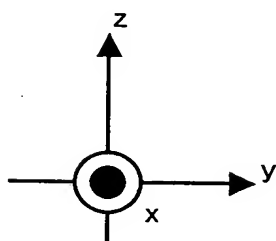
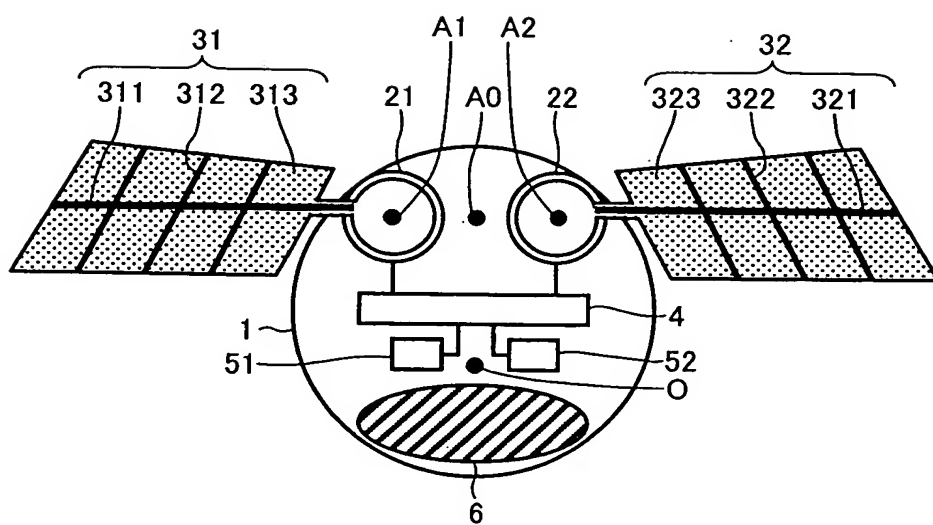


FIG.19

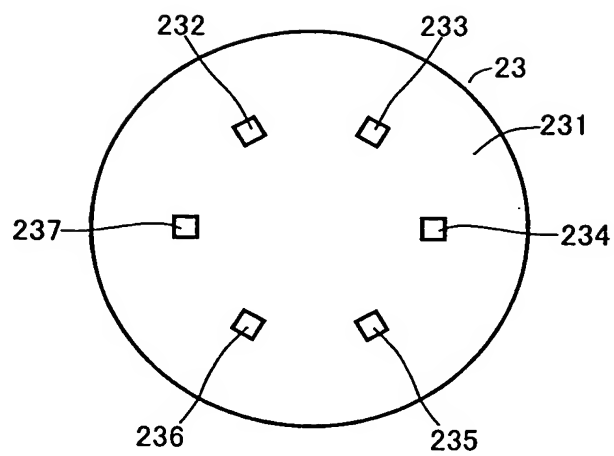


FIG.20

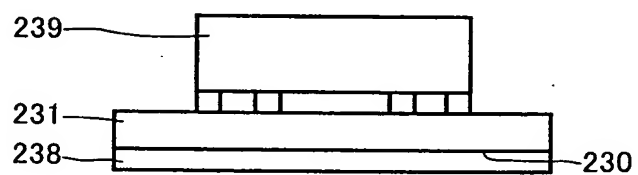


FIG.21

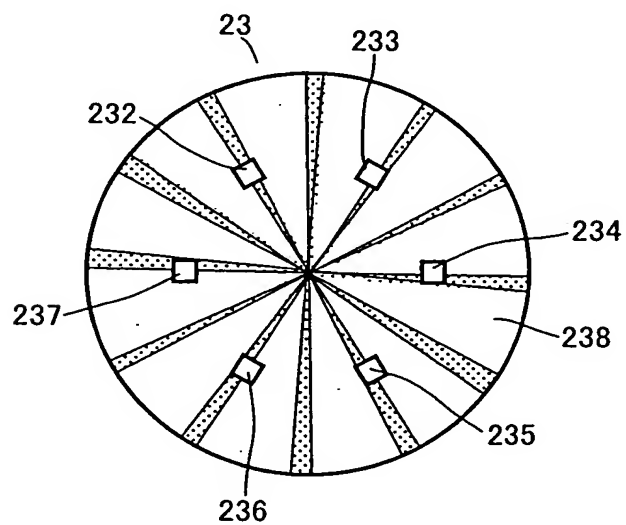


FIG.22

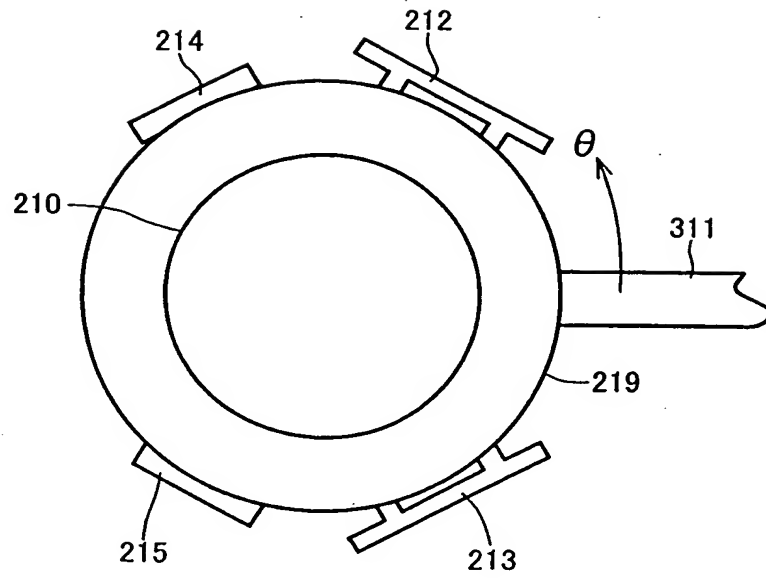


FIG.23

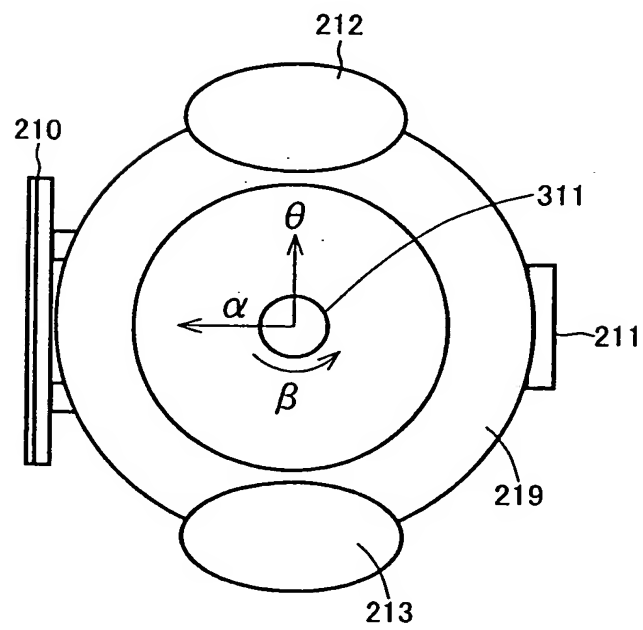


FIG.24

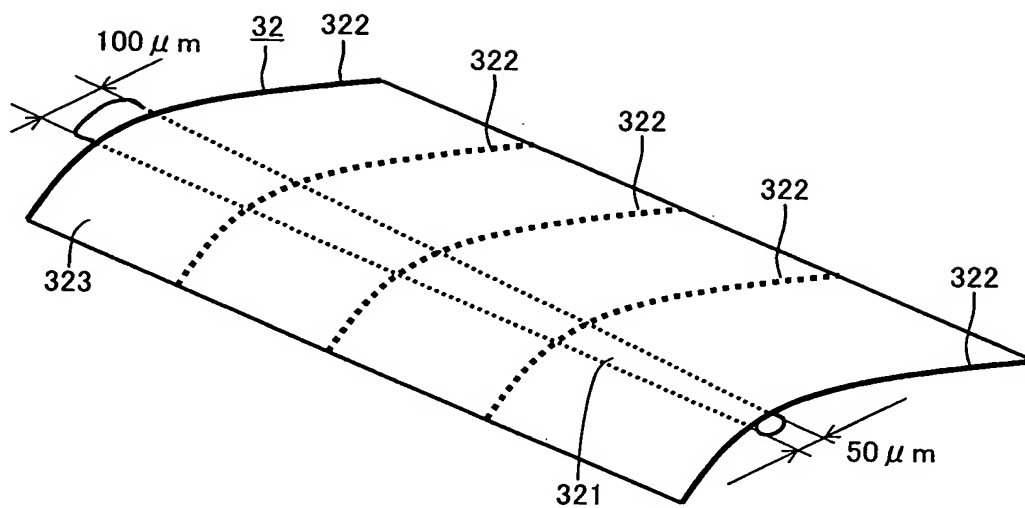


FIG.25

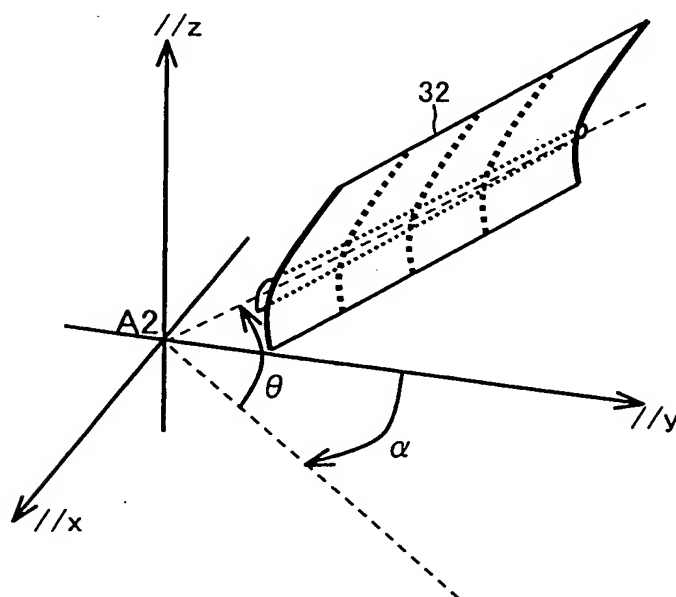


FIG.26

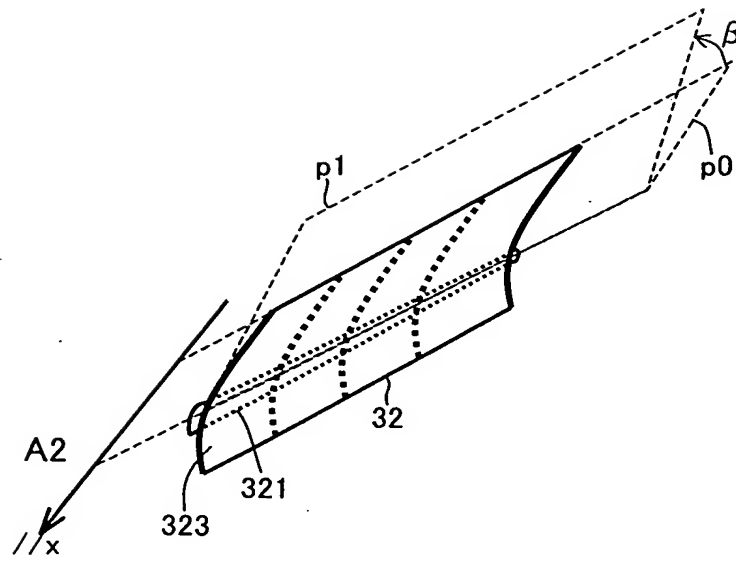


FIG.27

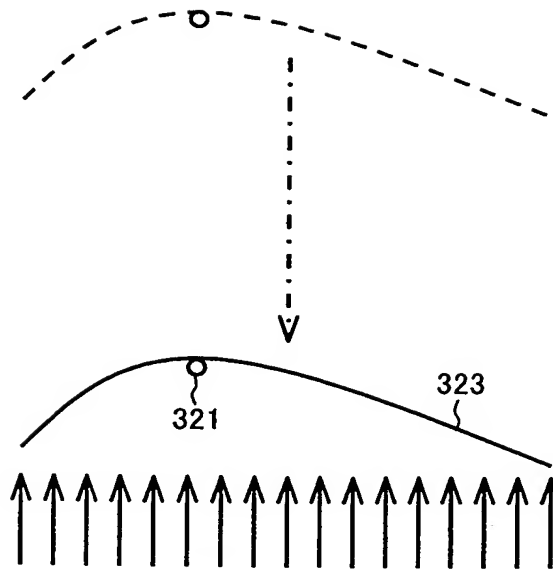


FIG.28

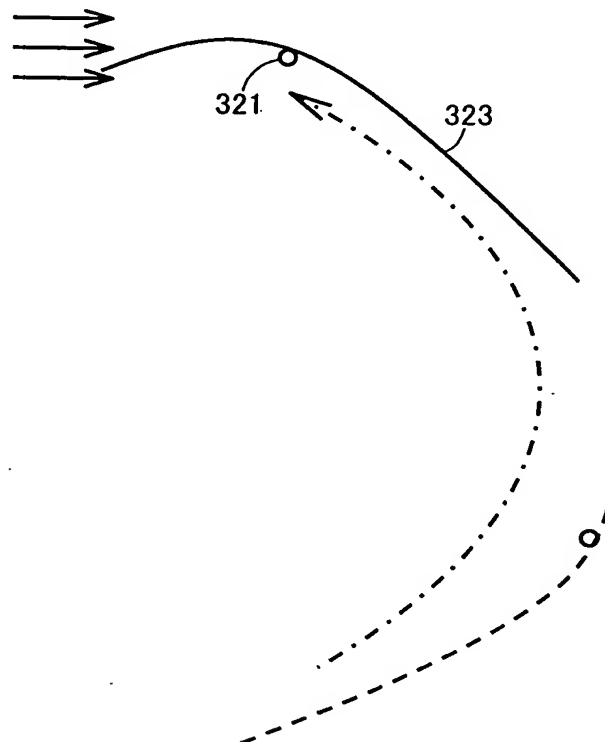


FIG.29

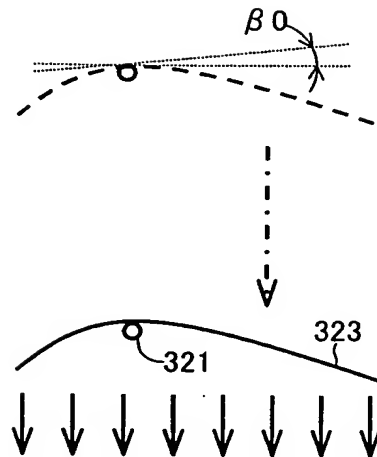


FIG.30

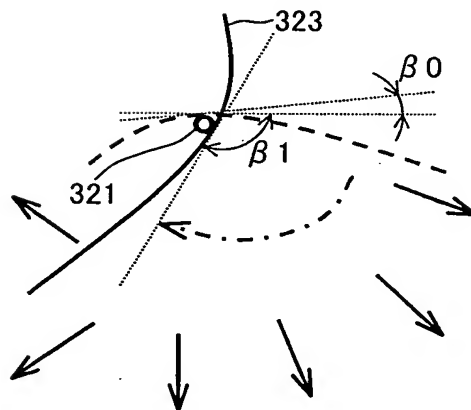


FIG.31

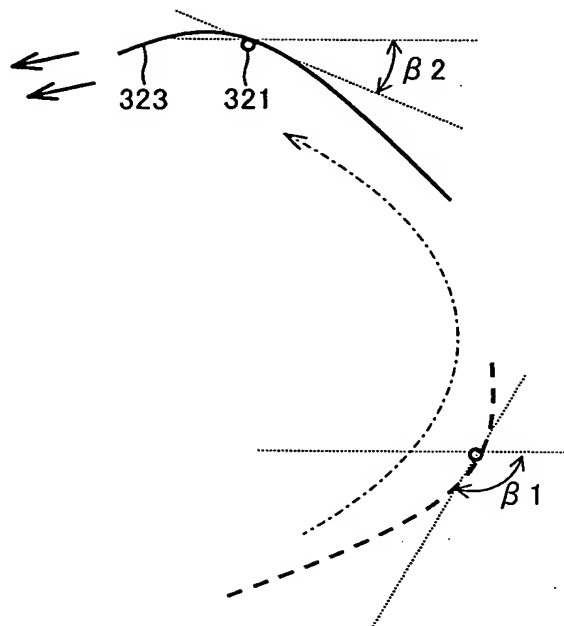


FIG.32

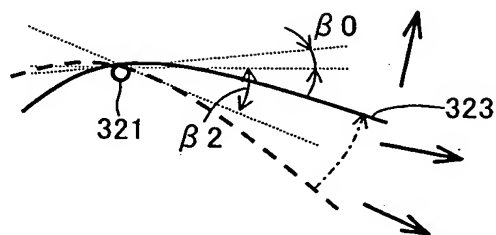


FIG.33

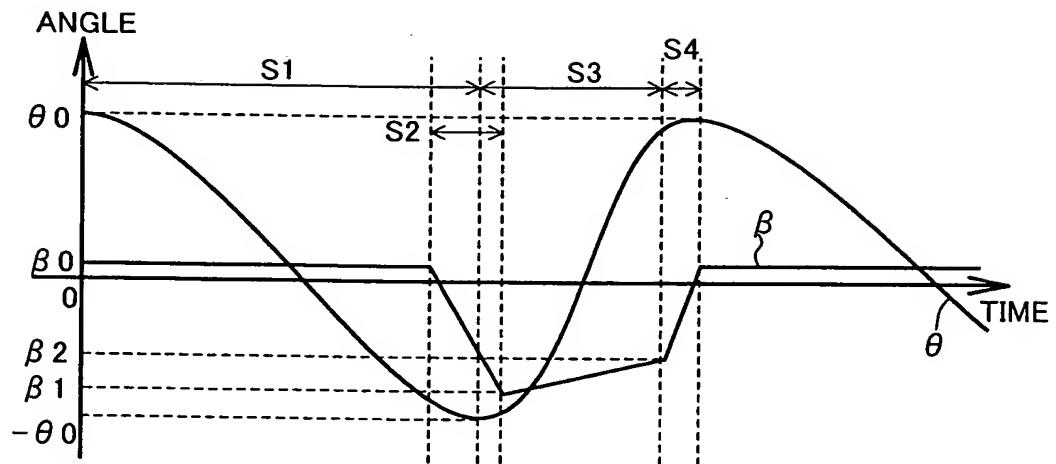


FIG.34

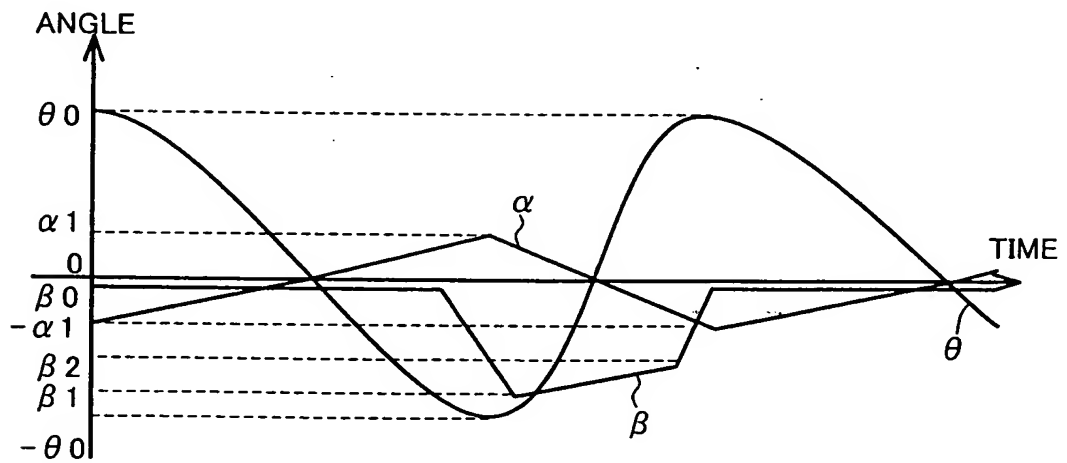


FIG.35

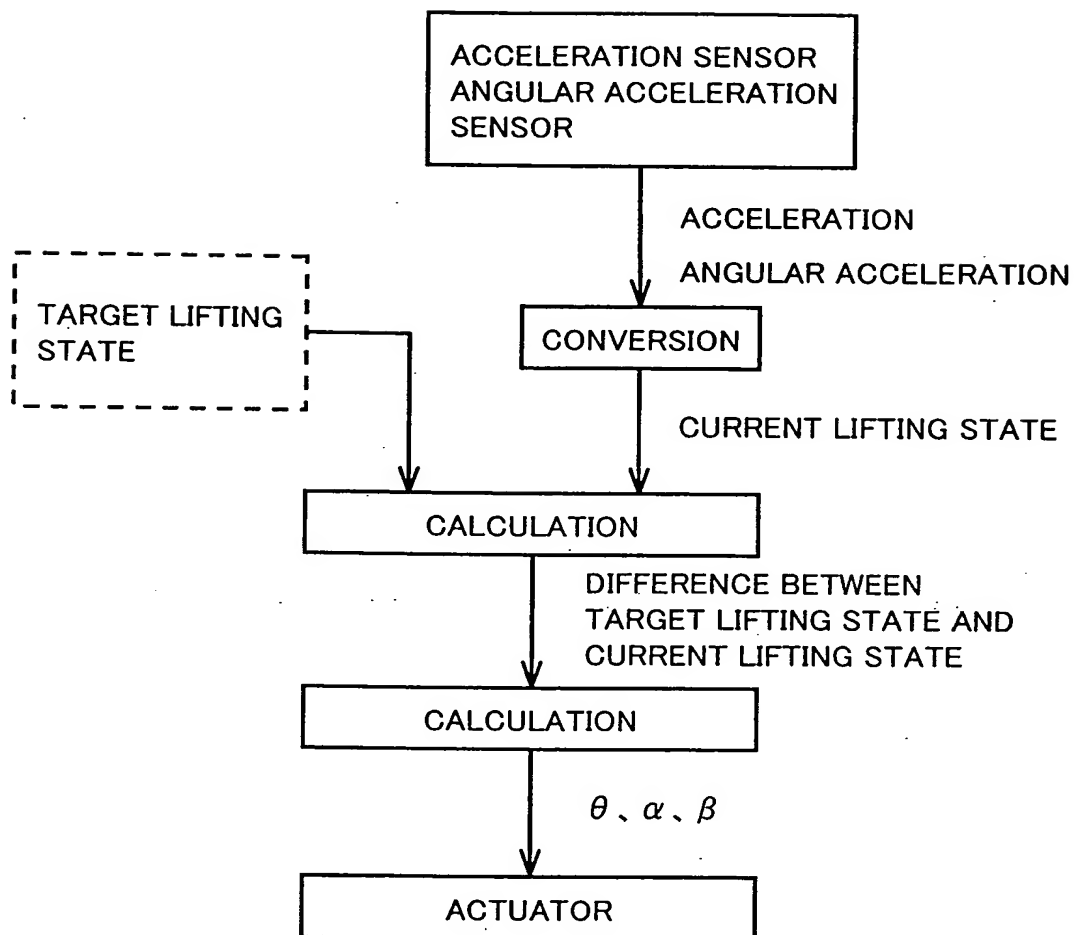


FIG.36

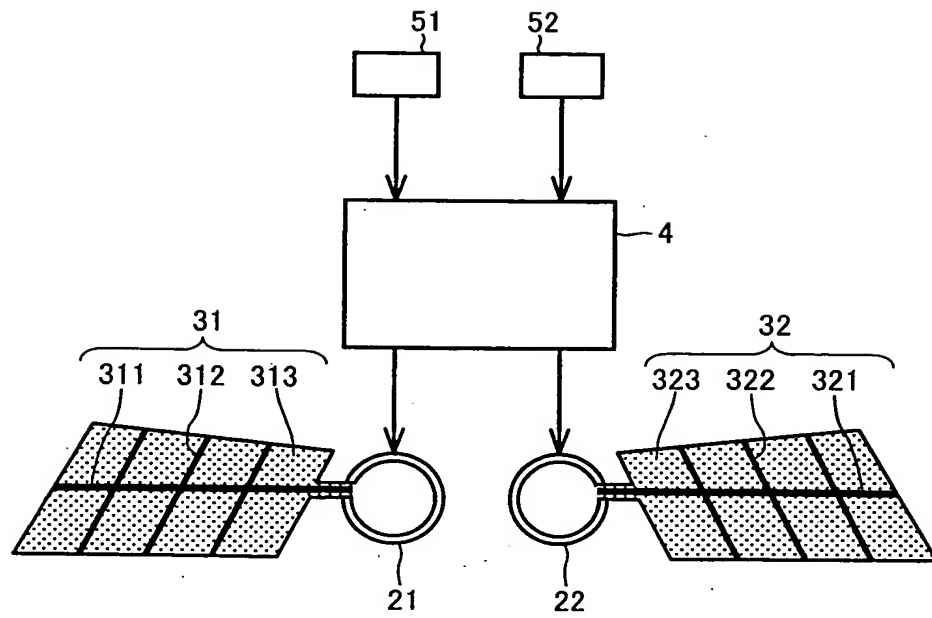


FIG.37

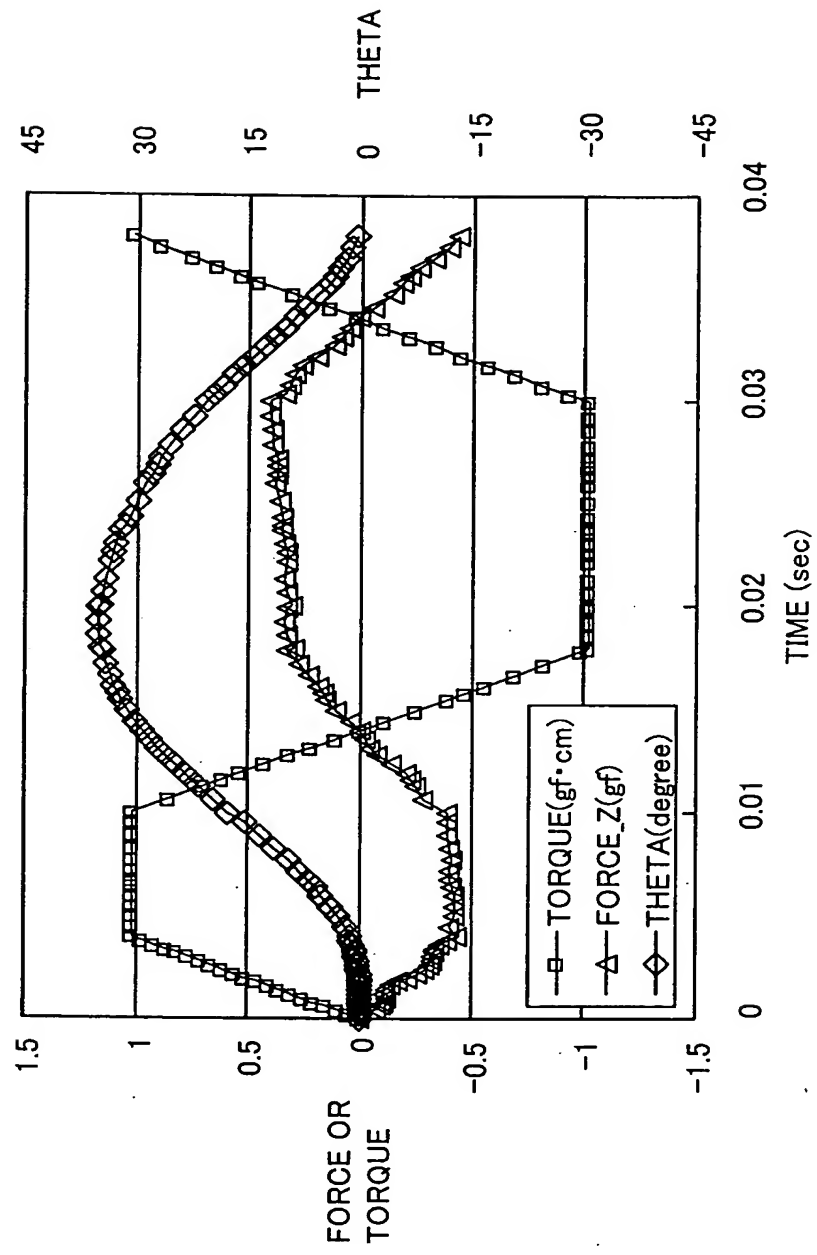


FIG.38

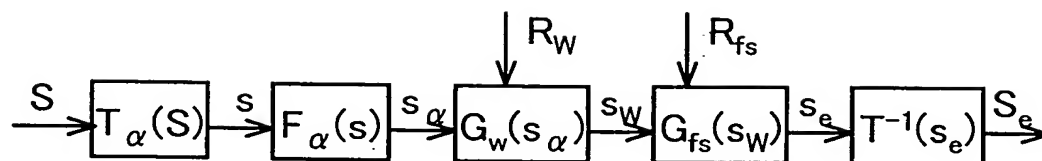


FIG.39

		$x''+$	$x''-$	$z''+$	$z''-$	$\theta_y''+$	$\theta_y''-$
S1	stroke $\theta \uparrow$			○			
	stroke $\theta \downarrow$				○		
	$-d\theta/dt \uparrow$			○			
	$-d\theta/dt \downarrow$				○		
	$-d\alpha/d\theta > d\alpha_{th}$	○					
	$-d\alpha/d\theta < d\alpha_{th}$		○				
	$\beta$ is about vertical to stroke direction.			○			
	$\beta$ is not vertical to stroke direction.				○		
	$\beta > 0$	○					
	$\beta < 0$		○				
S2	$-d\beta/dt \uparrow$	○		○		○	
	$-d\beta/dt \downarrow$		○		○		○
S3	stroke $\theta \uparrow$				○		
	stroke $\theta \downarrow$			○			
	$d\theta/dt \uparrow$				○		
	$d\theta/dt \downarrow$			○			
	$d\alpha/d\theta > d\alpha_{th}$		○				
	$d\alpha/d\theta < d\alpha_{th}$	○					
	$\beta$ is about vertical to stroke direction.				○		
	$\beta$ is not vertical to stroke direction.			○			
S4	$d\beta/dt \uparrow$	○			○		○
	$d\beta/dt \downarrow$		○	○		○	

FIG.40

	RIGHT ACTUATOR		LEFT ACTUATOR	
	DRIVING FREQUENCY	FLAPPING MOTION PATTERN	DRIVING FREQUENCY	FLAPPING MOTION PATTERN
UP	35Hz	B	35Hz	B
DOWN	25Hz	B	25Hz	B
GO FORWARD	30Hz	A	30Hz	A
HOVER	30Hz	B	30Hz	B
TURN RIGHT	30Hz	B	30Hz	A
TURN LEFT	30Hz	A	30Hz	B

FIG.41

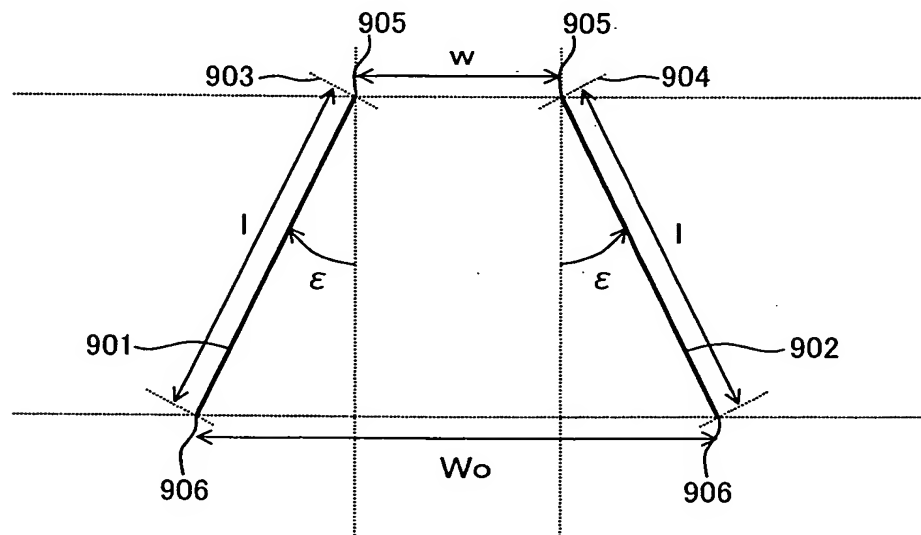


FIG.42

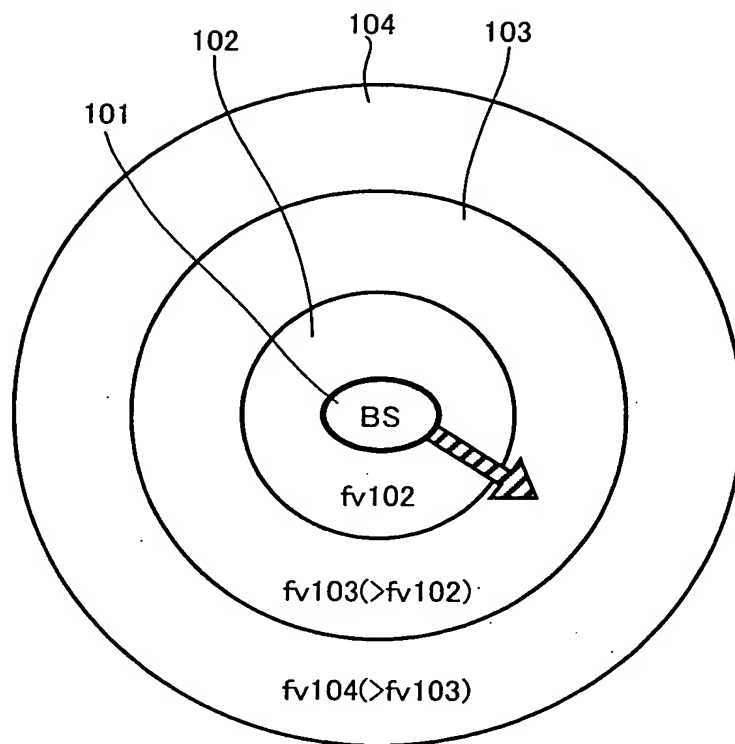


FIG.43

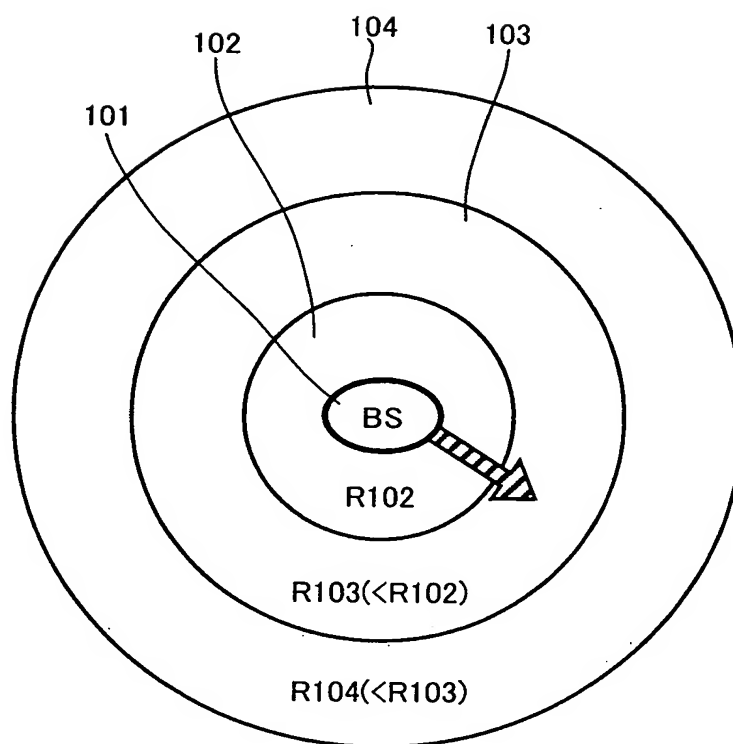


FIG.44

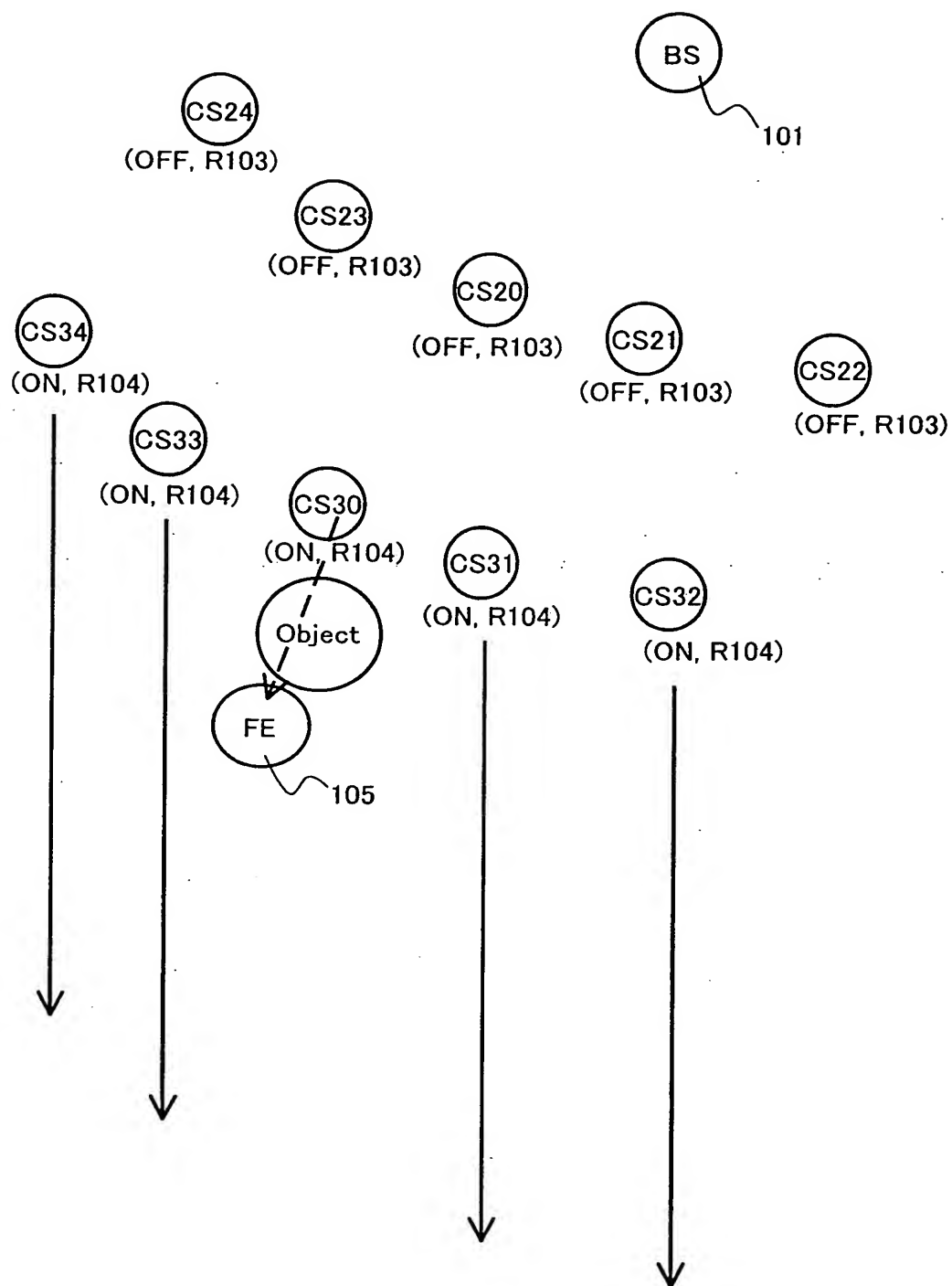




FIG.46

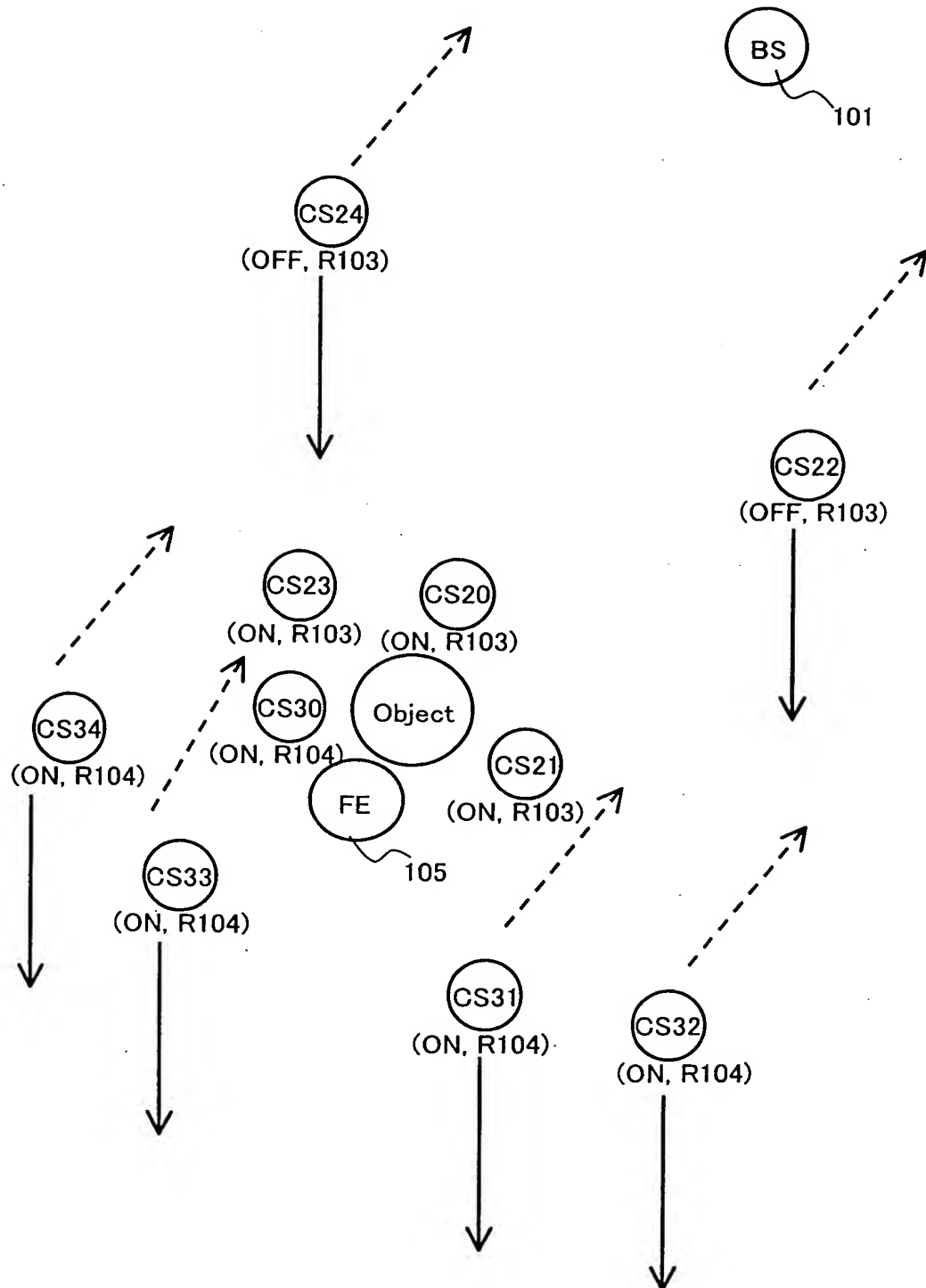


FIG.47

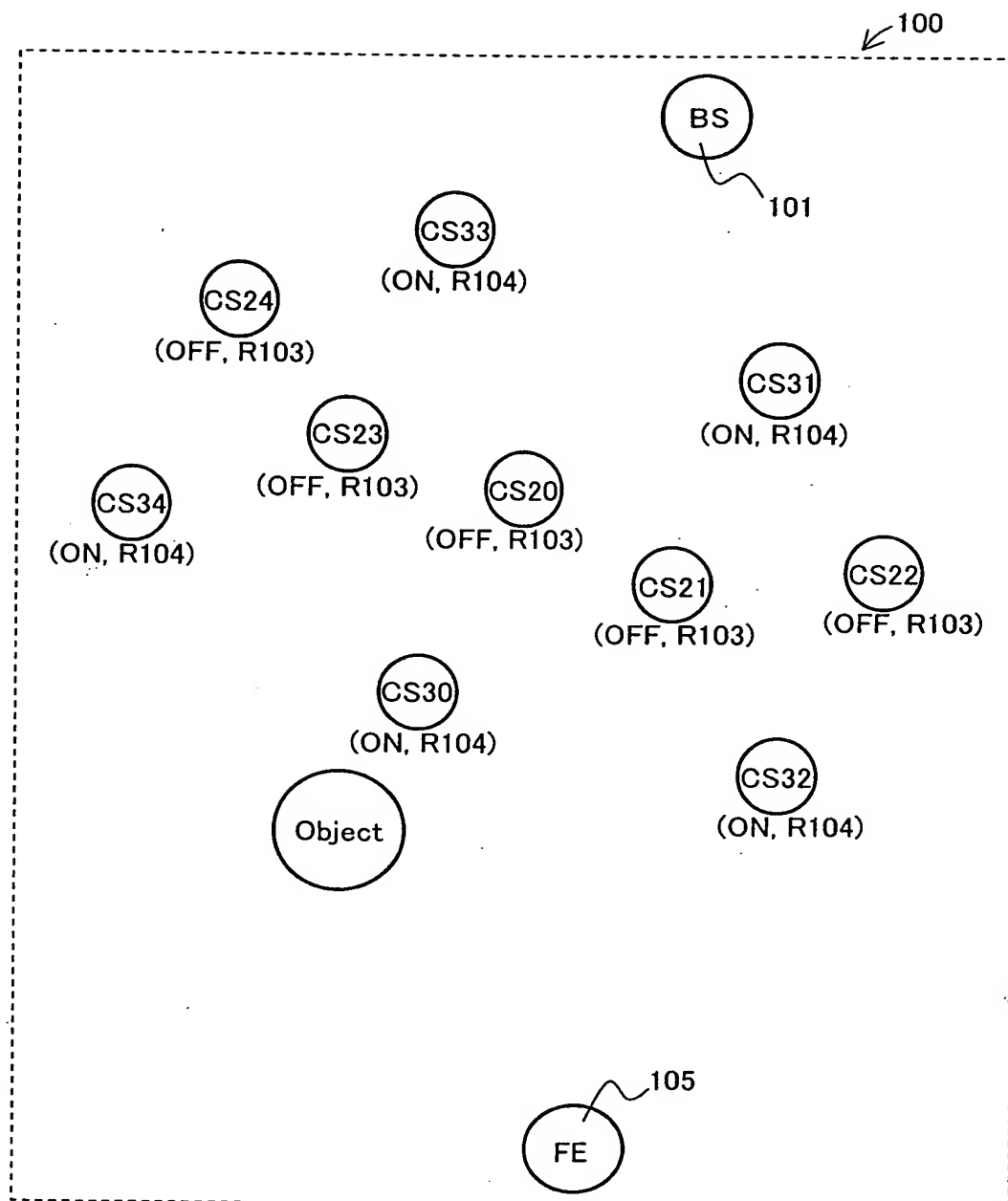


FIG.48

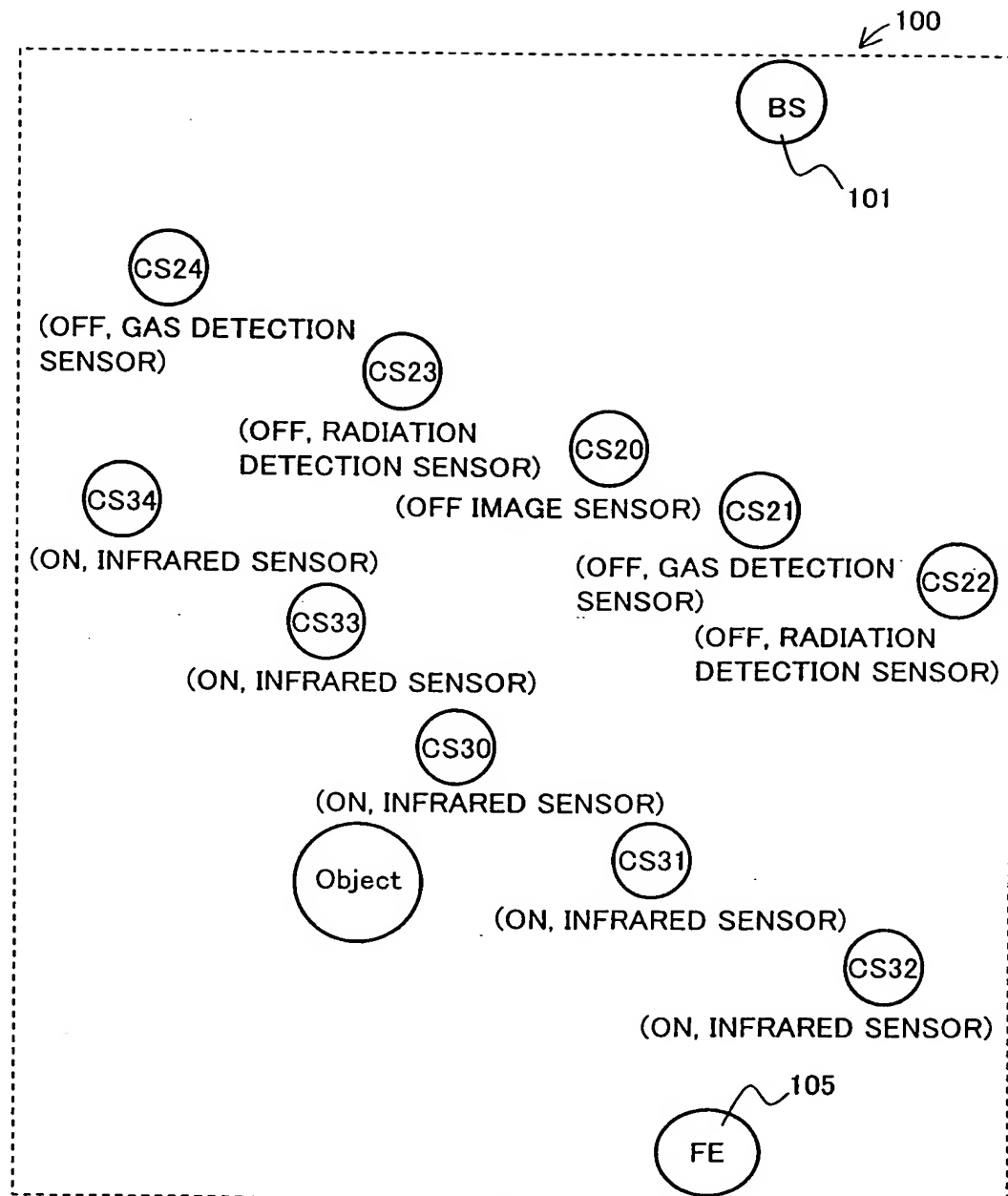


FIG.49

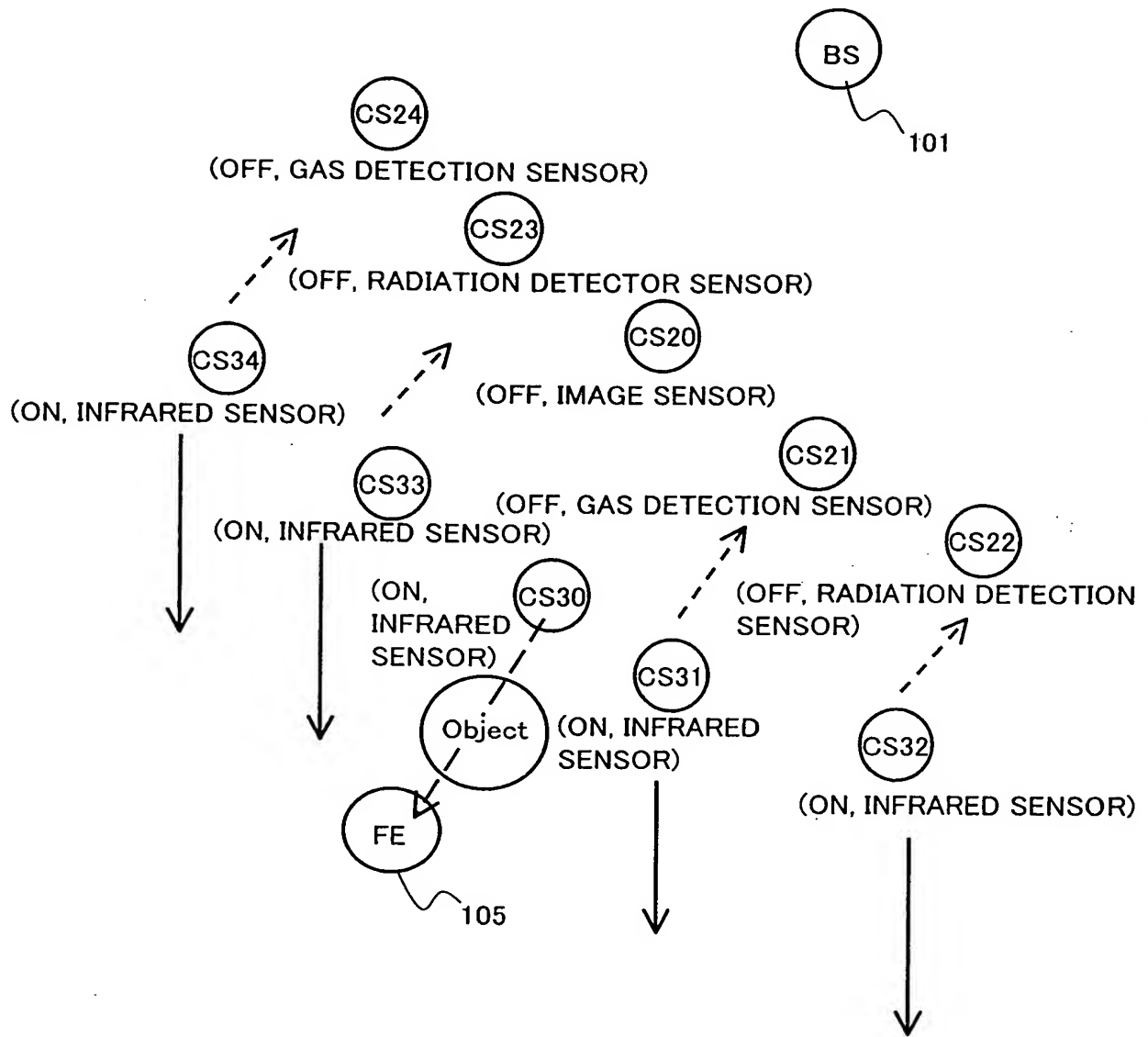


FIG.50

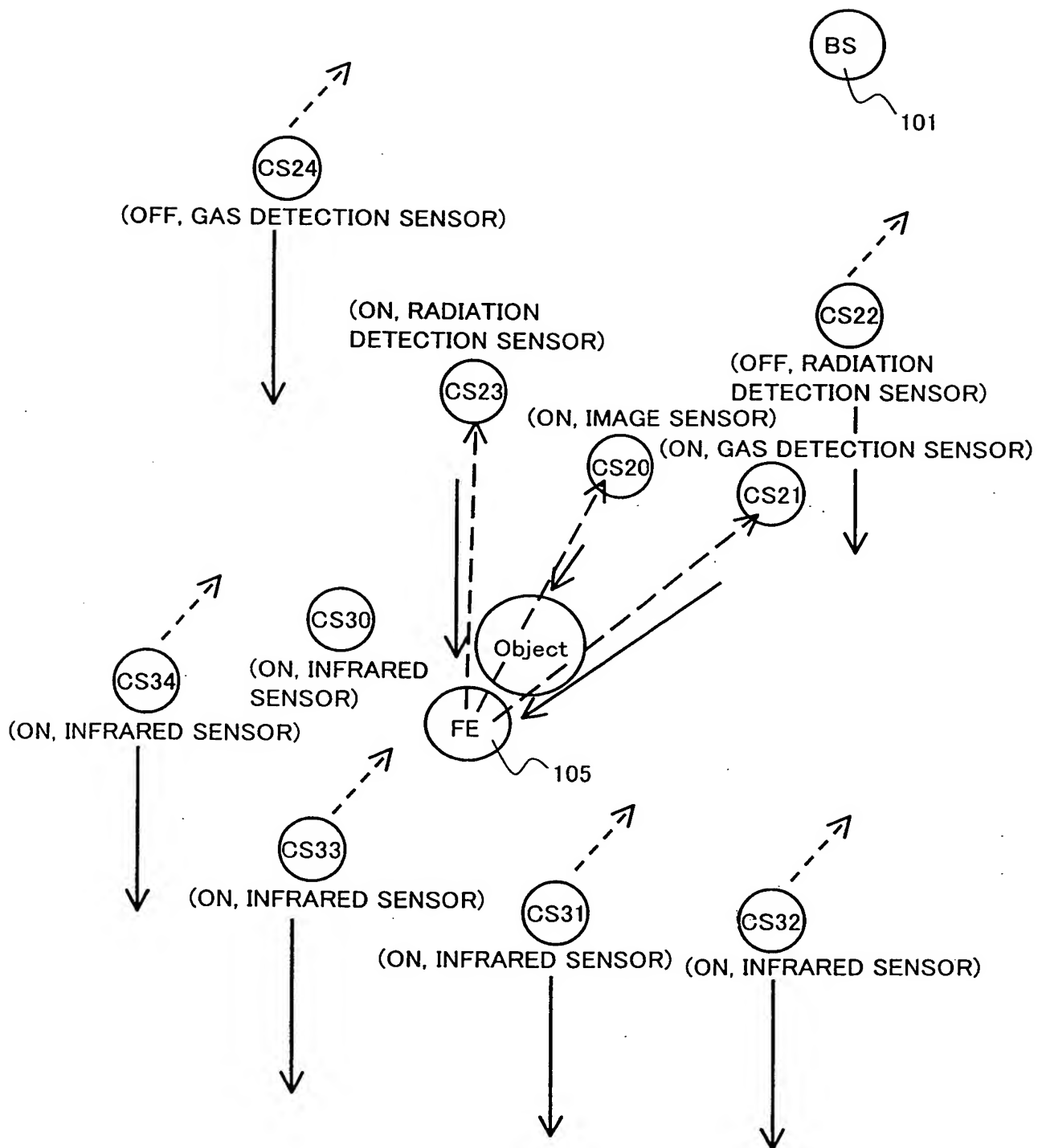


FIG.51

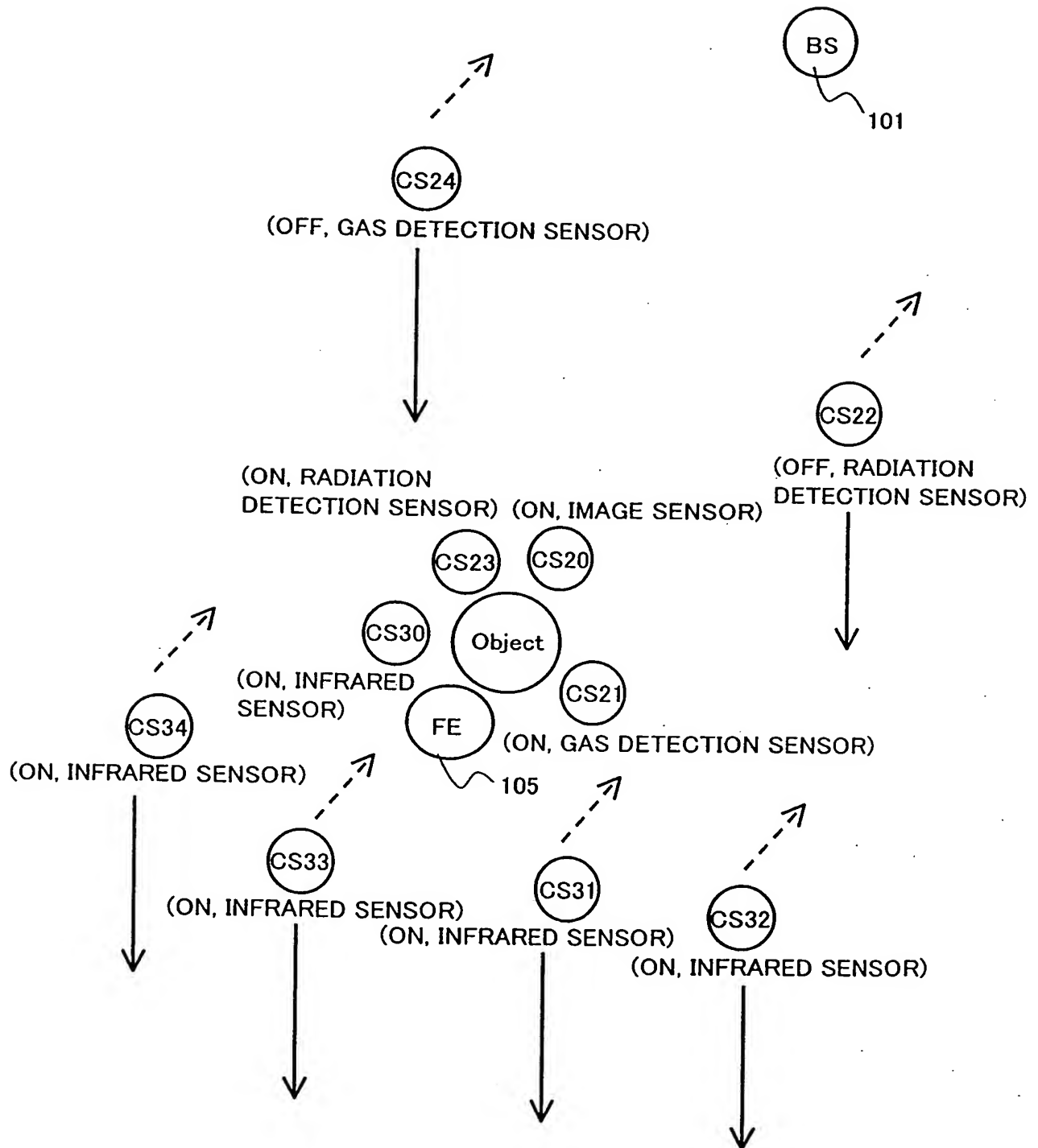


FIG.52

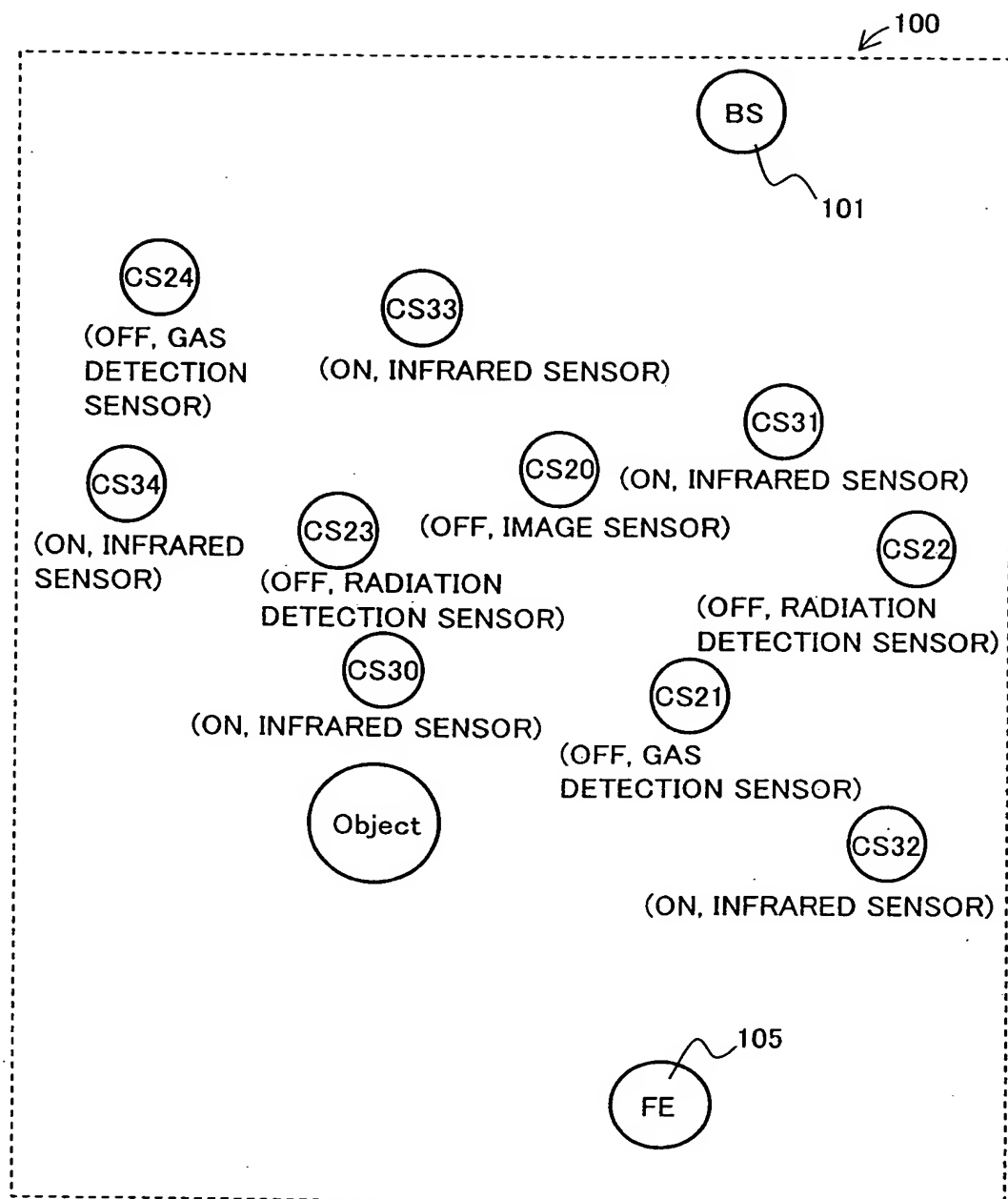


FIG.53

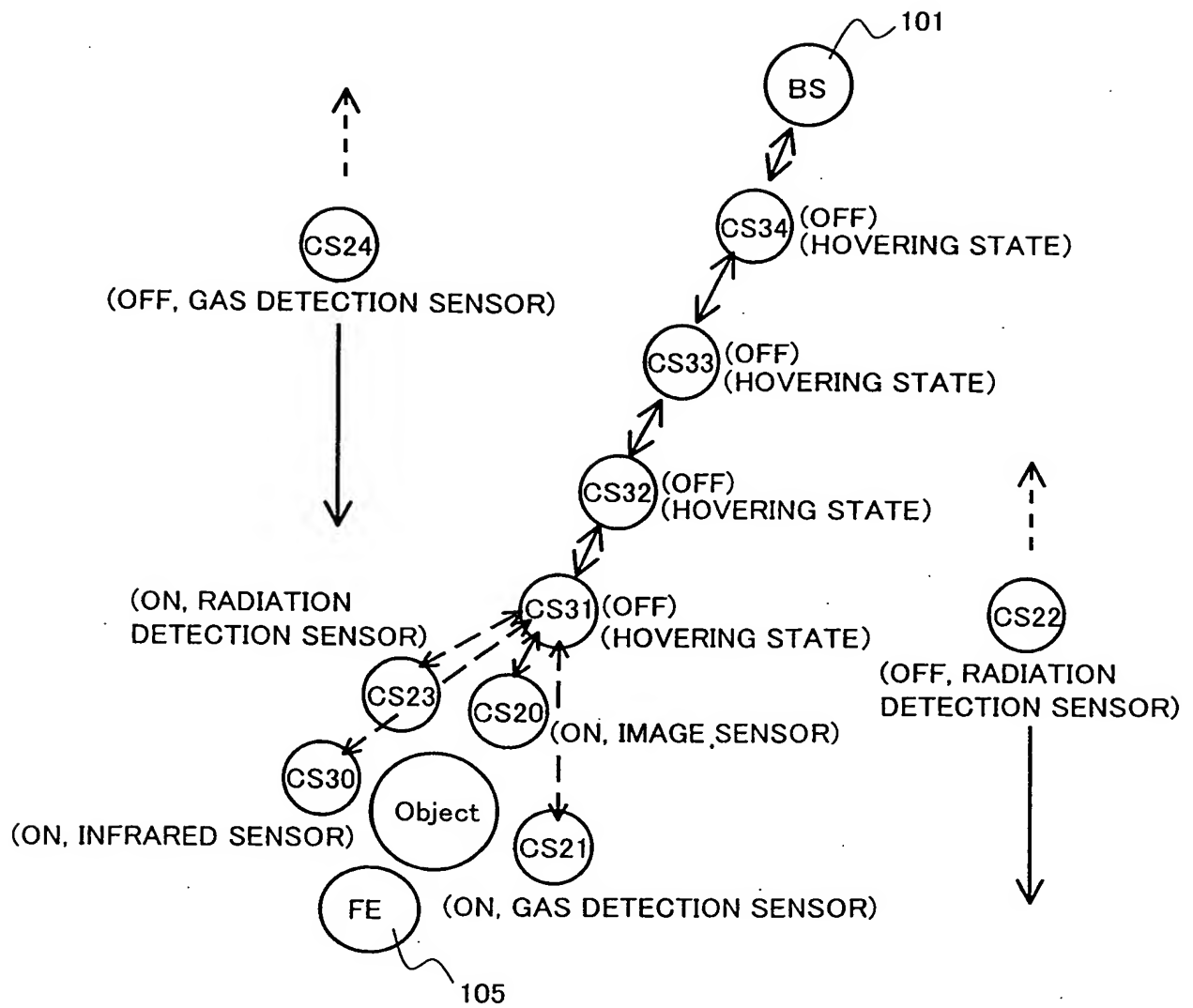


FIG.54

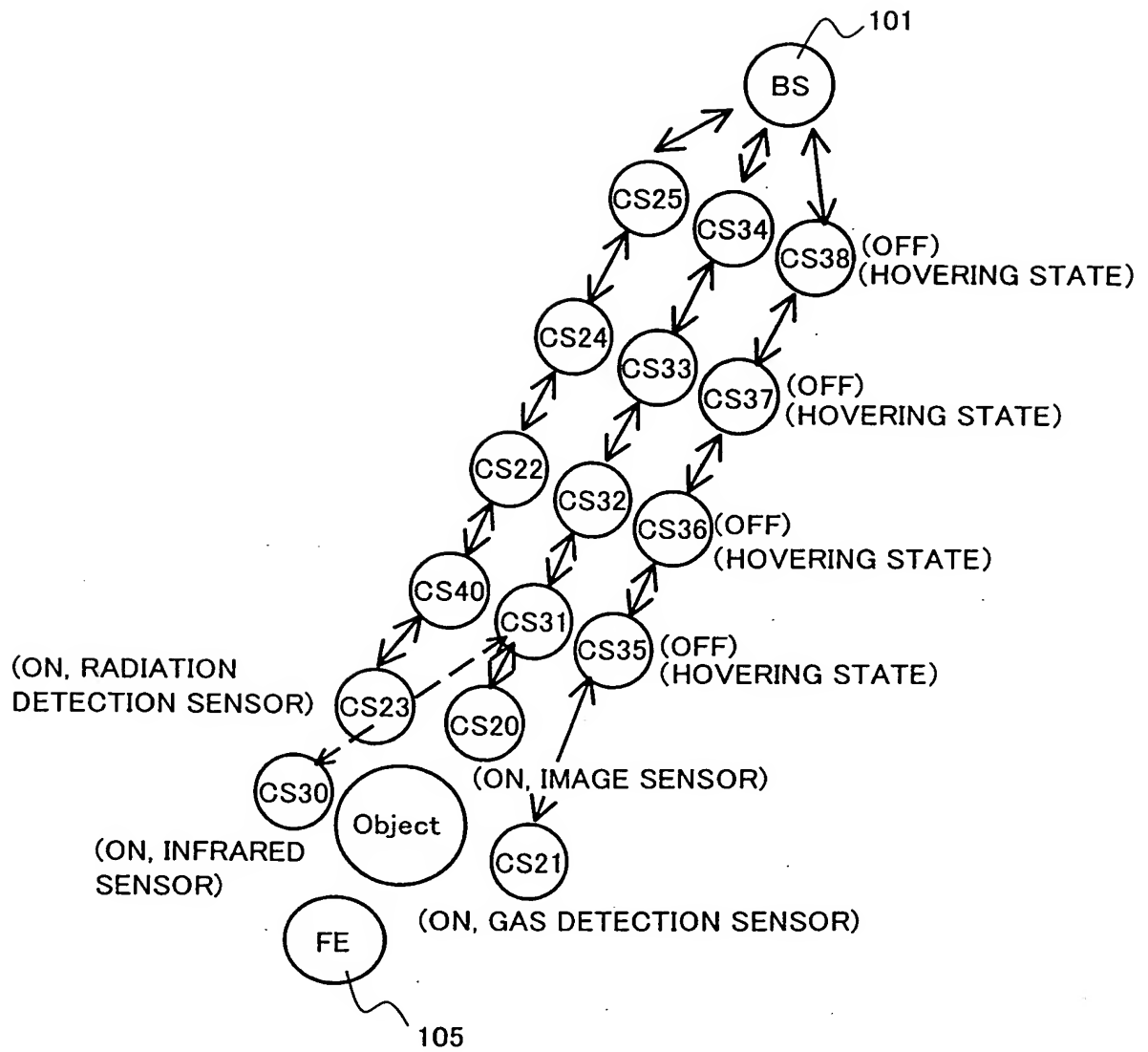


FIG.55

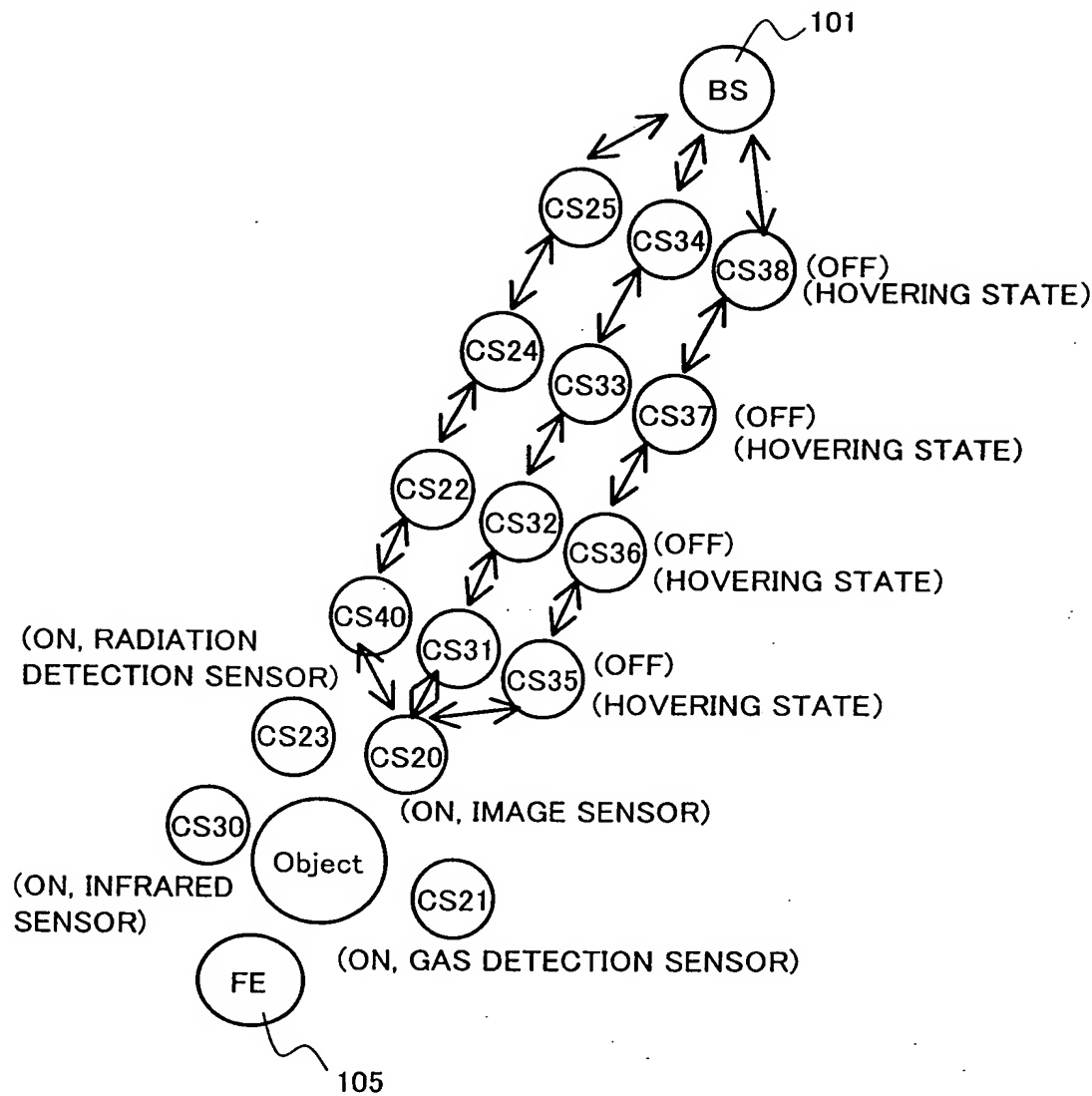


FIG.56

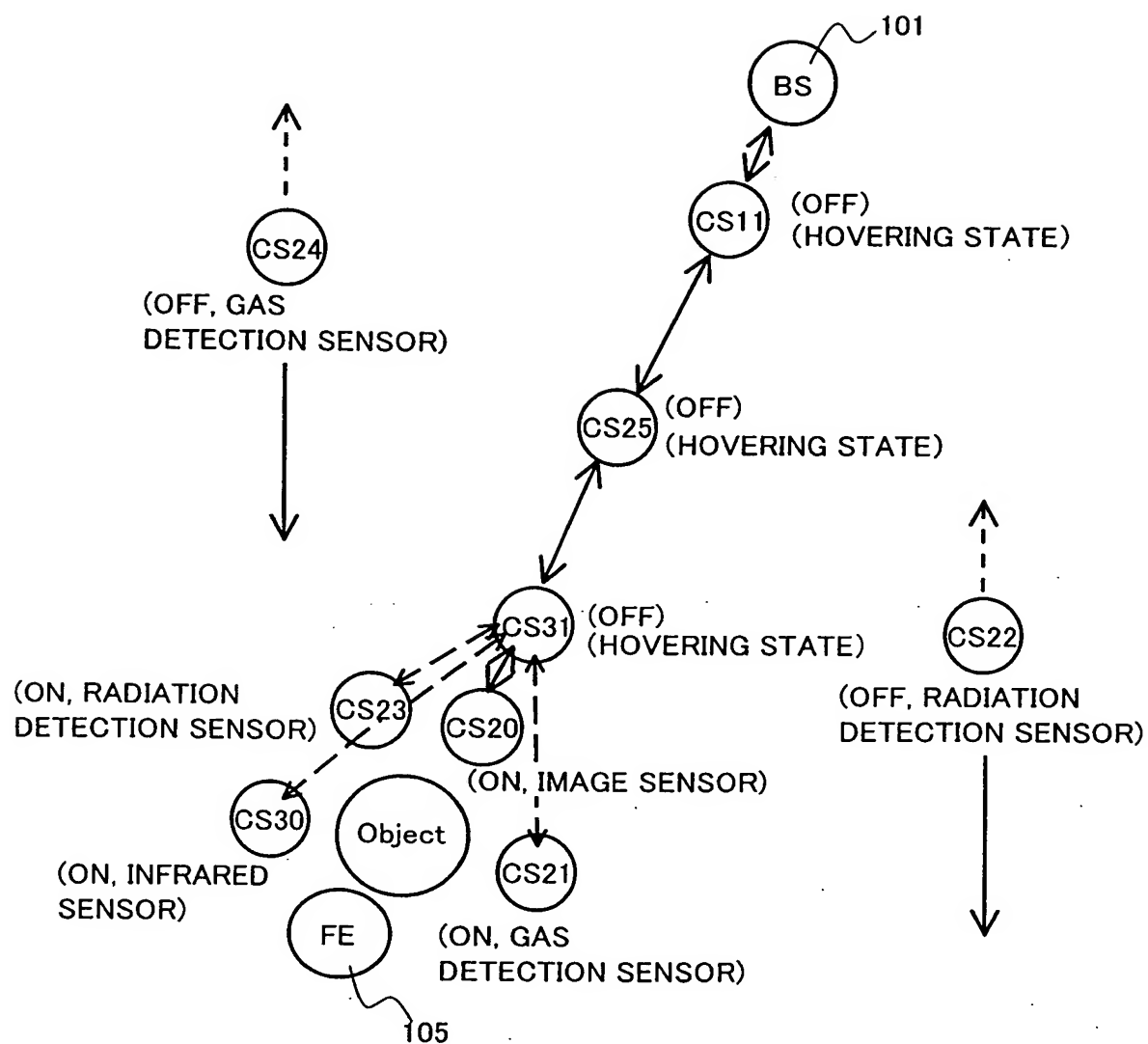


FIG.57

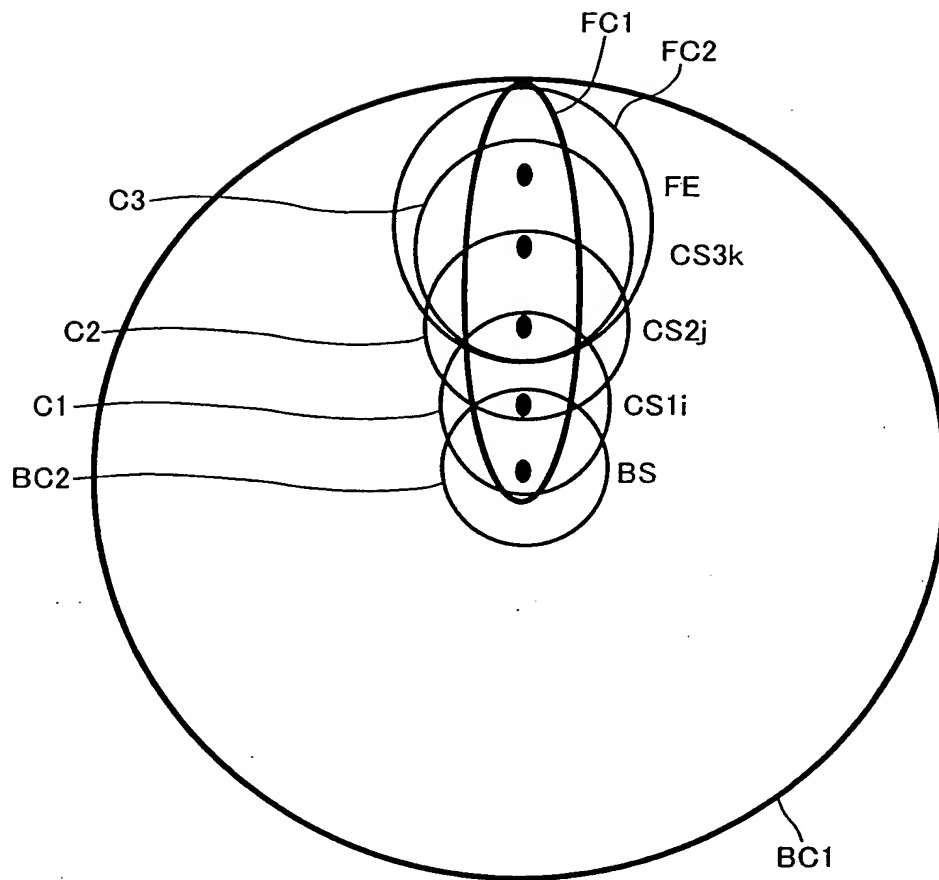


FIG.58

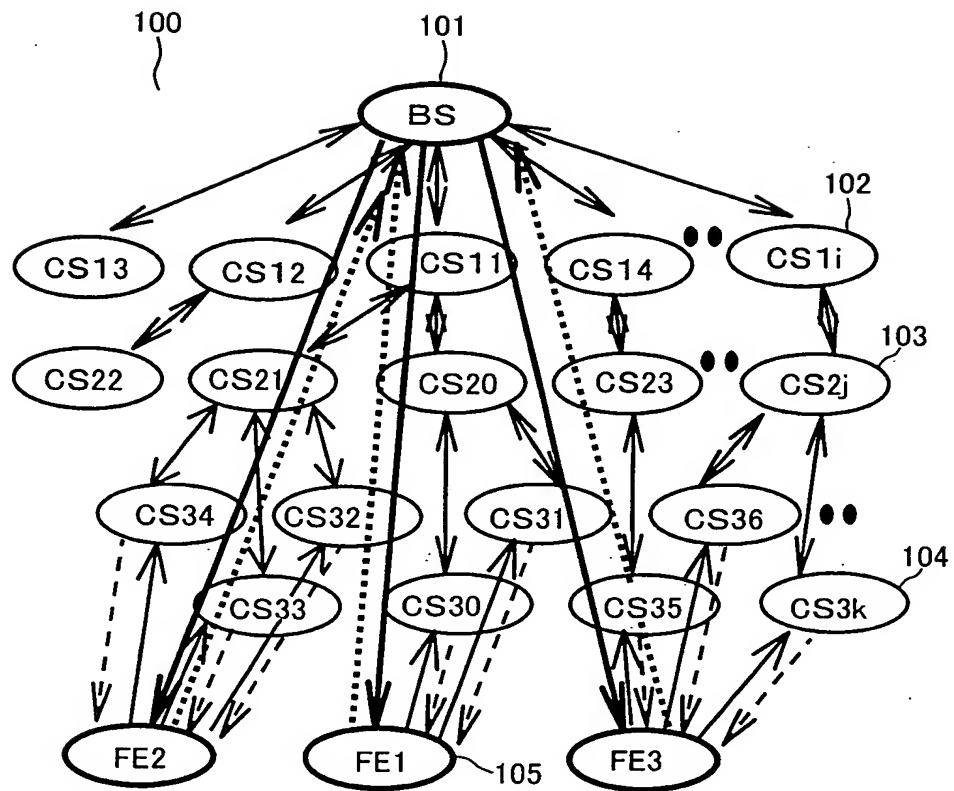


FIG.59A

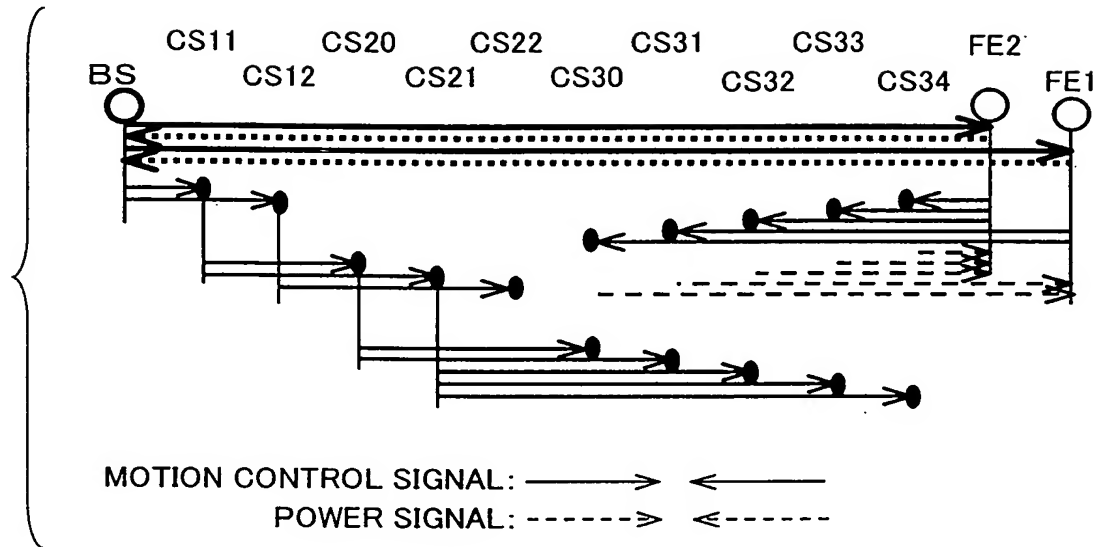


FIG.59B

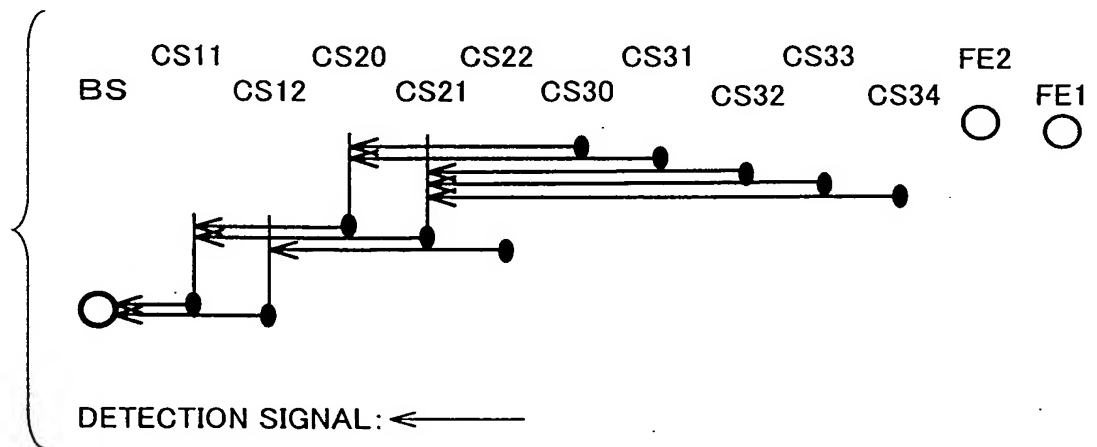


FIG.60

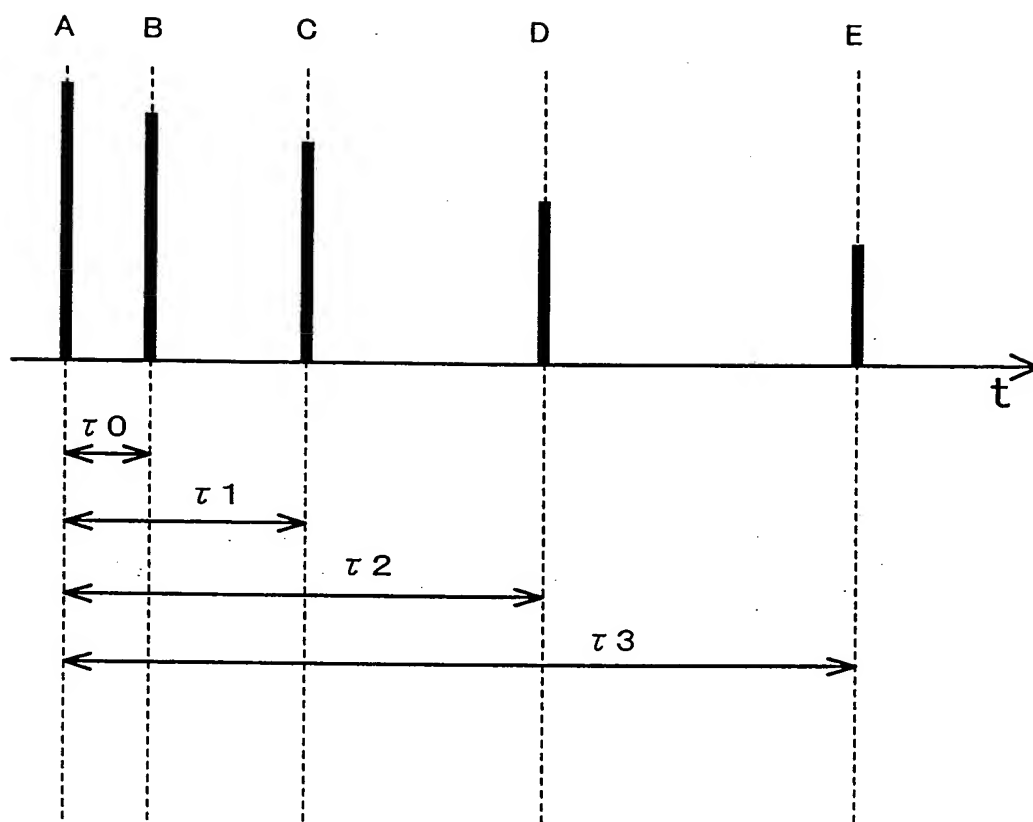


FIG.61

	BS	CS1(i-2)	CS1(i-1)	CS1i
A LAYER (SYNCHRONOUS)	CODE 0	CODE 0	CODE 0	CODE 0
B LAYER (UPSTREAM)	---	CODE 10	CODE 10	CODE 10
C LAYER (DOWNSTREAM)	CODE 10	CODE 20	CODE 21	CODE 22

	CS2(j-3)	CS2(j-2)	CS2(j-1)	CS2j
A LAYER (SYNCHRONOUS)	CODE 0	CODE 0	CODE 0	CODE 0
B LAYER (UPSTREAM)	CODE 20	CODE 20	CODE 21	CODE 22
C LAYER (DOWNSTREAM)	CODE 30	CODE 31	CODE 32	CODE 33

	CS3(k-3)	CS3(k-2)	CS3(k-1)	CS3k
A LAYER (SYNCHRONOUS)	CODE 0	CODE 0	CODE 0	CODE 0
B LAYER (UPSTREAM)	CODE 30	CODE 30	CODE 30	CODE 31
C LAYER (DOWNSTREAM)	CODE 40	CODE 40	CODE 40	CODE 41

	FEn
A LAYER (SYNCHRONOUS)	CODE 0
B LAYER (UPSTREAM)	CODE 10
C LAYER (DOWNSTREAM)	CODE 40

FIG.62 PRIOR ART

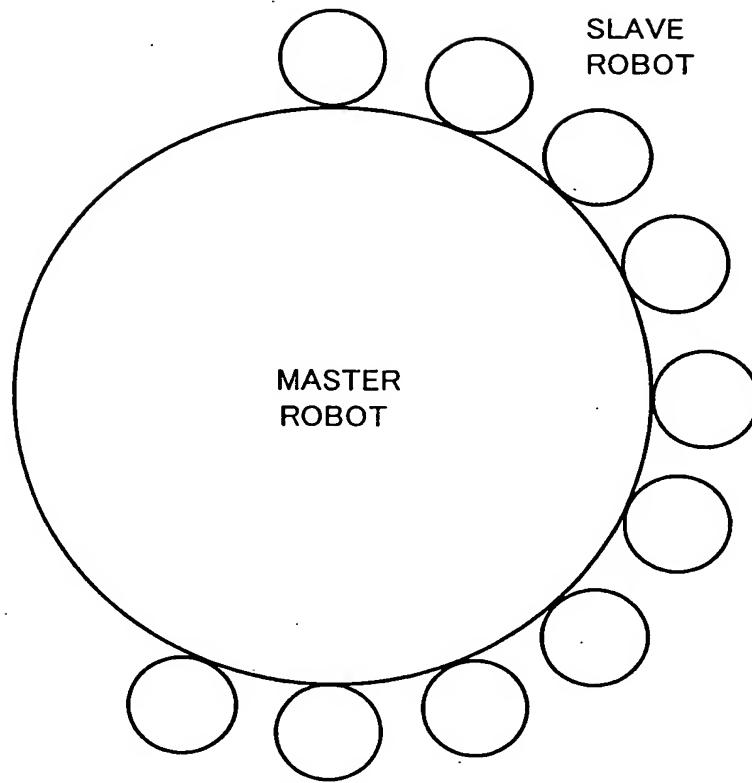


FIG.63 PRIOR ART

